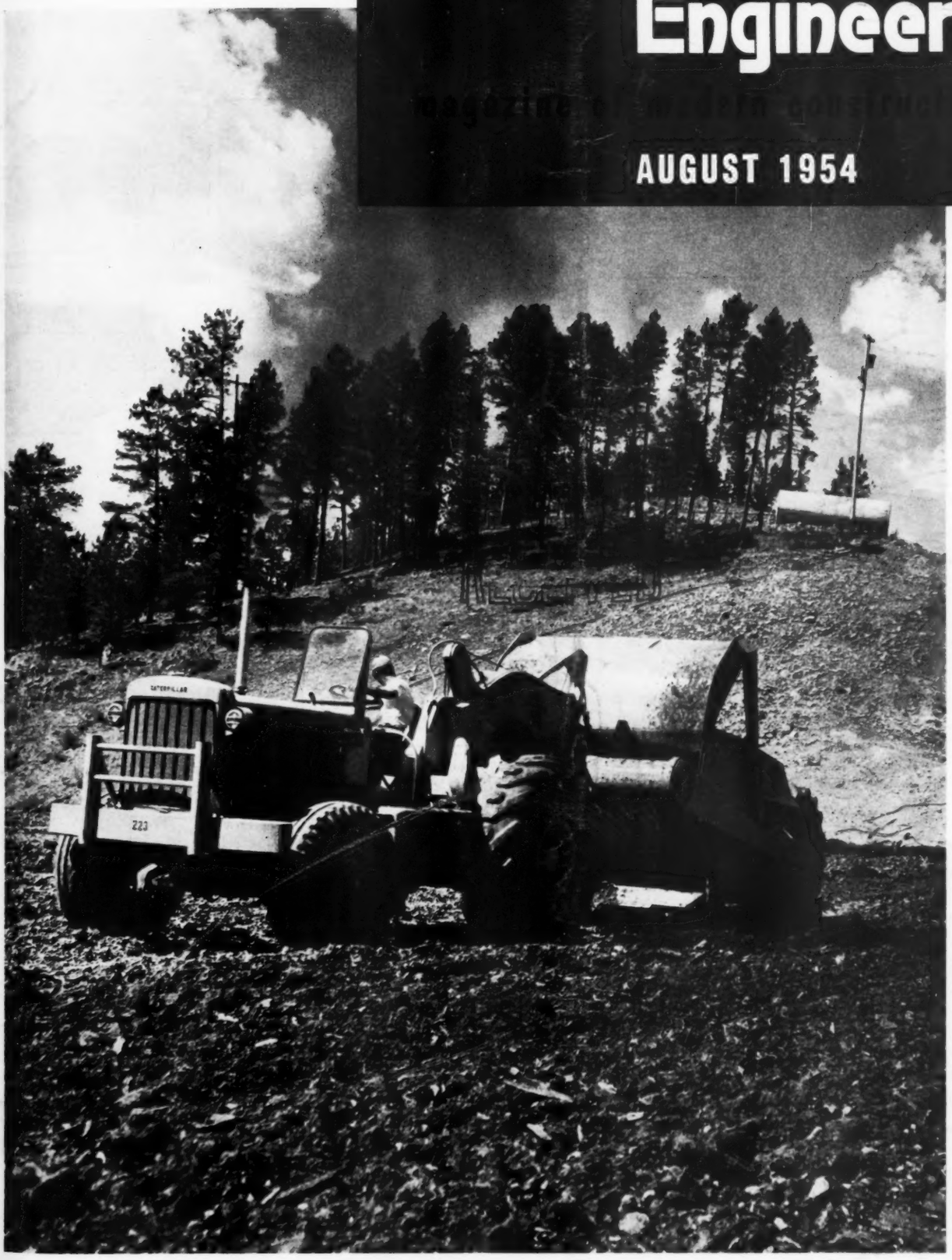
Contractors and Engineers

magazine of modern construction

AUGUST 1954



A Caterpillar No. 20 scraper, pulled by a Cat DW20, places fill for the impervious core of Pactola Dam, in South Dakota, part of the Missouri River Basin Project. The Adler Construction Co., Rapid City, S. Dak., is doing the job for the U. S. Bureau of Reclamation. *Page 6*

New Folder Describes Low Heat Pozzolith

A four-page folder describing use of Low Heat Pozzolith in mass concrete, for reducing total heat evolution, has just been published by The Master Builders Company.

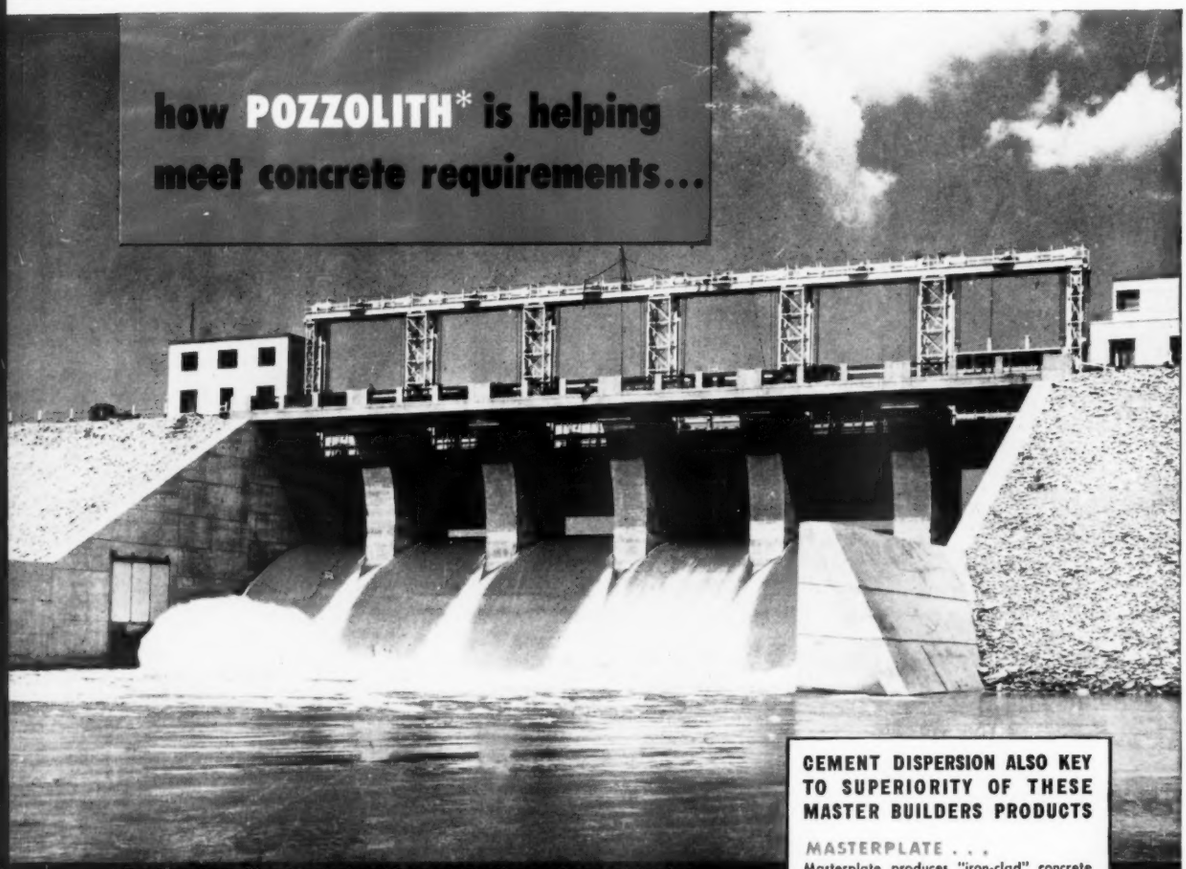
This folder outlines the advantages of Pozzolith in the plastic and hardened states, the various types and adaptations of Pozzolith, design of Pozzolith concrete, use of Low Heat Pozzolith in mass concrete, and for structures and flat slabs in hot weather and in tropic and semi-tropic areas. Also includes a comparison of Low Heat Pozzolith mixes with plain and air-entrained concrete mixes, and several examples of mass concrete structures where Low Heat Pozzolith was employed.

Other examples of mass concrete structures where Low Heat Pozzolith was used are shown in a new 48-page booklet on Hydraulic Projects, also published by The Master Builders Company.

In addition to pictures of the structures, which are located in various countries in North and South America and in Japan, the booklet shows test data and describes interesting concrete problems and how they were solved.

Copies of these two pieces of literature may be obtained by writing The Master Builders Co., Cleveland 3, Ohio.

how POZZOLITH* is helping meet concrete requirements...



Fanshaw Dam. Flood control unit located 15 miles northeast of London, Ontario. Consulting Engineers—H. G. Acres & Company, Niagara Falls; General Contractors—Foundation-Mannix Ltd., Toronto. Concrete supplied by Red-D-Mix Co., Hamilton, Ontario.

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

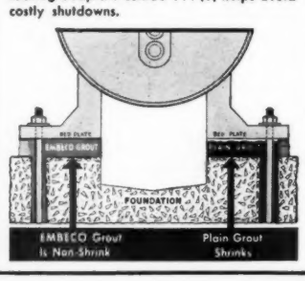
MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-safe, non-dusting and easy-to-clean. Non-colored and colored. For new floors and resurfacing.

Section of Masterplate Floor. Note Thickness of Armored Surface.

EMBECO . . .

Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns.



an aid here in producing great durability and abrasion resistance

Pozzolith has proved to be a valuable "tool" in the construction of dams, tunnels, reservoirs, retaining walls, and similar structures because it increases the resistance of concrete to freezing and thawing and lowers permeability. In the Fanshaw Dam Pozzolith also helped meet the important requirement of abrasion resistance.

These are several of the reasons for the wide use of Pozzolith . . . last year in more than 13,000,000 cubic yards of concrete.

Full information on Pozzolith and "see-for-yourself" demonstration kit sent on request.

***POZZOLITH . . . the cement-dispersing, water-reducing agent, developed by The Master Builders Co. in 1932, which makes available the optimum amount of air in concrete and fully complies with the water-cement ratio law. Added at the mixer.**

The MASTER BUILDERS Co.

CLEVELAND 3, OHIO - TORONTO, ONT. Subsidiary of American-Marietta Company Cable Address, Mastmethod, New York

"IRON-CLAD" CONCRETE FOR HEAVY TRAFFIC AREAS

The Masterplate "iron-clad" concrete fl... 4-6 times more wear-resistant than the... plain concrete floor, also corrosion-re... spark-safe, easy-to-clean, non-slip, non-... and economical. Non-colored and colored.

Experience in all types of plants proved the value of Masterplate "... clad" concrete floors in helping to m... tain a smooth flow of production, r... maintenance expense and improve ... safety.

Only with Masterplate can a Masterplate ... armored" concrete floor with all its imp... service advantages be obtained. This is b... only Masterplate contains the cement-d... ing agent calcium lignosulfonate which ... it possible to easily float a pound or more ... tough, ductile metal on fresh concrete ... *keep it at the surface.*

Full information on Masterplate—for new ... and resurfacing old concrete floors—and ... for-yourself" demonstration kit supplied u... quest by the manufacturer, The Master B... Co., Cleveland 3, Ohio.

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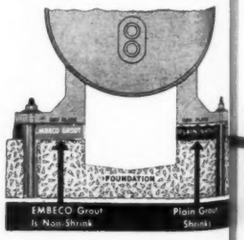
Colorcron floors cost less additional than ... ing the floor, outwear the best plain co... floor, and have more uniform and more ... color than is obtained from the use o... ments put in the mix. Colors: light gre... grey, red, brown, black, green, dark gre... non-colored.

Full directions for the use of Colorcron ... obtained from the manufacturer, The M... Builders Co., Cleveland 3, Ohio.

FOR NON-SHRINK GROUTIN...

To avoid shrinkage—principal cause of ... in equipment grouts—plant engineers ... **beco metallic aggregate, the material th... duces a non-shrink flowable grout.**



Cross-section shows how an easily f... able, flowable Embeco Grout coun... shrinkage to produce full contact ... bedplate.

Following are a few of the many other ... Embeco non-shrink mortar: grouting ... bolts; grouting steel floor grids; grouting ... pipes through walls; caulking bell and ... pipe; patching floors, ramps and platfo...

A 16-page booklet of useful data and in... tion on the Embeco Non-Shrink Met... Grouting may be obtained from the m... turer, The Master Builders Co., Cleve... Ohio.

Contractors and Engineers
magazine of modern construction

CONTENTS

AUGUST 1954

AIRPORTS

Blending and compacting base-course material for runways 72
Both asphalt and concrete pavements extend air strips 73

BRIDGES

Pipeline on trestle delivers concrete for bridge piers 12
Heavy-duty cellular cofferdams resist strong tides at bridge site 32

BUILDING CONSTRUCTION

Steel members for factory building are fabricated on the job 5
New 18-story office building features welded construction 20
Use of tilt-up wall panels speeds work on huge warehouse 64

EARTHMOVING

Hills are incorporated into core of earth-fill dam 6
Big fleet of dirt-moving equipment works on ore mine project 48
Excavating equipment: conveyor machinery 106
Front-end shovel goes underground to clean sewer 116

ENGINEERING

Shear walls in tall building reduce wind sway 58
New prestressing method wraps beams with high-tensile wire 86

GENERAL

Hydroelectric plant has world's largest regulating gates 24
Use of pile shell and composite piling hastens foundation work 52
Canadian dealer keeps pace with country's construction boom 92

HIGHWAYS

State route is completely rebuilt to provide modern highway 10
Crushed stone forms flexible base for blacktop surface 16
Equipment combinations cut concrete-paving time on turnpike 28
Base-course material is mixed with calcium chloride in pugmill 38

MAINTENANCE

Downtime losses reach every part of the job 62

MANAGEMENT

Special equipment simplifies payroll work in field office 44

PORTRAIT IN PRINT

New AGC official is force behind concrete-paving firm 80

DEPARTMENTS

Avoid Legal Pitfalls 68
Construction Camera 90
Convention Calendar 19
Distributor Doings 92
Editorial 4
Manufacturer Memos 122
Names in the News 22
News and Views 8
Product Parade 110

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EDITORIAL

New Techniques Spell Progress

The accompanying picture shows a 22-story office building under construction at 57th Street and Park Avenue in New York City. The building looks like a typical skyscraper project with structural steel and concrete framework, but the similarity of construction between it and the neighboring buildings ends about there.

Instead of the more conventional masonry walls, this new skyscraper is enclosed on the two street sides by an exterior curtain of prefabricated aluminum wall and window panels. What is really striking about the job is the fact that, in the brief span of 10 hours, a total of 676 two-story-high panels, each 23 feet high by 4½-feet wide, were bolted to steel brackets previously welded to the structure's framework. Fewer than 40 men, starting work at 6 a. m. on June 21st, completed their herculean task by 4 o'clock that afternoon. According to the builder, the Tishman Realty & Construction Co., Inc., of New York City, the conventional methods of masonry wall construction would have taken eight to ten weeks.

The development and installation of this new material is only one of the many examples of technological advancement in the construction industry. A year ago, the same builder closed in a 26-story office building with similar panels, furnished, as in the more recent case, by the General Bronze Corp. of Garden City, N. Y. That operation required only 6½ working days. Yet within 12 months, installation techniques with the new material have progressed so rapidly that the erection period has been cut to a fraction of what was once considered record-breaking time.

No outcry has been heard from the bricklayers that new methods and materials are working to their disadvantage. The $4.15 hourly rate (7-hour day) for bricklayers in New York City would indicate that this skilled craft is holding its own on the economic front. Too, these new thin-skinned panels, ⅛-inch thick, must be backed up with 4-inch cinder block to comply with existing building code regulations governing fire protection. This backing requires skilled labor.

New techniques, it seems, are never a detriment to labor. Since World War II, there have been many advancements in construction procedures, but recent research by *Fortune* magazine points out that construction led all the other divisions of industry in the per cent increase in employment for the period from 1939 to 1953. During those 14 years, employment in construction increased 124.3 per cent. The two next highest divisions, manufacturing and government, increased 70.5 and 67.5, respectively.

New tools, materials, techniques, and systems all contribute to this growth of the construction industry. The new developments are usually independent in origin and unrelated to each other. In skimming through our issue this month, the reader will come across a story on tilt-up construction (page 64), another new development in the building field; a description of a new method of prestressing concrete beams (page 86); a story on welding, instead of riveting, a steel skyscraper frame (page 20); an article on how a pugmill is used to mix gravel and calcium chloride in road-base work (page 38); and a description of construction on a new toll superhighway in West Virginia (page 28).

Not to be slighted in road-building progress is the part that improved equipment and techniques have played in constructing better highways faster and cheaper. Not too long ago, 75 per cent of road-building costs went for labor and the other 25 per cent for materials. This is reversed today, primarily because of new machinery, so that labor accounts for only 25 per cent, with the remaining 75 per cent of the costs going for materials.

Construction is a big industry in the United States, second only to the food industry in dollar volume. Last year 45 billion dollars went into construction, which employed 3½ million persons directly and required 4 million persons to service the industry. This is a total of 12 per cent of the nation's workers. Its myriad contributions to the general economic wealth of the country cannot be measured in money or numbers. As long as the construction industry continues to progress and develop with labor-saving, time-saving, and cost-saving tools and techniques, this country's welfare seems assured.

NEWS AND VIEWS

After weathering sharp opposition from governors when first proposed, President Eisenhower's **multi-billion-dollar highway-modernization program** has been taken under special study by the state heads. The plan, made public at the 46th annual Governor's Conference, at Lake George, N. Y., is designed to give the country a 1970 highway network adequate for an estimated 200 million population. Its main points are: financing based on self-liquidation of each project by tolls and/or taxes if possible; and the construction and planning of the system on a national level, with local agencies administering the funds.

Meanwhile, a special cabinet committee just set up by the President is scheduled to **report on the nation s transport problems by December 1.**

Another item for the governors to consider is the reprisal threatened by some states against other states imposing **truck-mileage taxes.** The action of non-tax states would involve barring from their highways trucks from tax states, unless registration fees are paid or entry permits obtained. The tax subject also came up in the House of Representatives, where a bill has been introduced which would **withhold some federal-aid highway funds** from states imposing ton-mile, axle-mile, or similar use taxes. The amount held back, equal to the money raised by the use taxes, would then be reapportioned among states not imposing use taxes.

At present, however, $875 million in federal-aid money has already been granted to states—six months ahead of the time limit set by Congress. This means **an additional $100 million worth of highway work will be under contract by September of this year.**

Even if this amount were not included in the total volume of contracts, highway awards this year would have hit an all-time high. State public works—which is making up for some of the loss in federal spending—together with highway, office, and store construction, are **making this year's contract volume inch up to the records set in 1953.** Awards now stand only 10 per cent below 1953, while at the end of the first quarter they were 34 per cent below last year.

Structural Steel Units Are Fabricated on Job

By R. E. HAAS, District Engineer, The Lincoln Electric Co.

Window framing along the top of the building frame is tack-welded into joists with pieces of angle iron. An E-6010 electrode was used.

ON-THE-JOB fabrication of structural steel for the new American Sterilizer Co. plant at Erie, Pa., resulted in a saving of from $15 to $20 per ton on the cost of the steel as compared to the cost of prefabricated building members, according to the contractor's estimate. Approximately 190 tons of steel were used.

H. Platt Co. of Erie is the general contractor on this project, which includes the construction of a one-story 440 x 440-foot building. Steel work was begun late last year on one portion of the plant, and was completed this summer.

Warehouse steel shipped to the site was cut to size with acetylene torches. This operation involved trimming about 1½ inches of oversize from most of the members and stock. Principal steel members were 24-inch 110-pound wide-flange beams measuring 39 feet 3 inches long, and 8-inch 31-pound columns. Erection bolts were used to fasten the members before welding.

Clips and base plates were welded to columns. On base plates weighing approximately 100 pounds each, center lines were drawn on columns both ways and the plate was clamped on center. The largest plates were 1/2 x 14 x 14 inches. Forty-foot clear-span joists, tack-welded on 6-foot 8-inch centers and later welded along both sides and top and bottom edges, were used.

Steel deck roofing was also welded on this job, as was window framing. On the roofing, an E-6011 electrode was used to burn through the 20-gage deck for a plug weld right to the joist. To fabricate window framing, giant fixtures were made from heavy 24-inch I-beams laid out and tack-welded on top of smaller 8-inch beams. Angle clips were welded to the flanges of the 24-inch beams to locate the window frame members, made of 3-inch longitudinal angle iron and 4-inch vertical U-iron.

These window frame members were cut to size, placed in the fixture, and tack-welded. Finish fillet welding was done after the frame members were removed from the fixtures and placed on 4 x 4's.

On flat welding, an E-6012 electrode was used extensively. On other positioning, or vertical or overhead welding, an E-6010 electrode was used.

Harold Cook was registered engineer for H. Platt Co., and Joe Szeman was foreman for Walter Clifton, steel erector on the job.

THE END

A workman using an E-6011 electrode plug-welds 20-gage steel deck sheeting to joists in the frame. Connections are made through the metal.

Stage construction . . . . one of Asphalt's most important contributions to road building

Step #1

When traffic is light, consisting of automobiles and occasional small trucks, a surface-treatment of Texaco Cutback Asphalt, covered with stone chips or other aggregate, provides an adequate road surface. This inexpensive improvement covers the road with an all-weather surface, which is tough, waterproof and dustless.

Step #2

Increased traffic volume, with a larger percentage of trucks, calls for a more durable surface. A low-cost Texaco Asphalt improvement of the Road-mix type is added to the original surface. Local aggregate and a suitable Texaco Cutback Asphalt are mixed thoroughly on the road by power grader. The mix is spread to the desired thickness and compacted. This surface will serve moderately heavy traffic for a number of years with low upkeep.

Step #3

Finally, when volume and weight of traffic call for a heavy-duty pavement, the existing road provides an excellent base for a hot-mix Texaco Asphaltic Concrete wearing surface. Each of the two earlier types of Texaco Asphalt construction, after serving traffic effectively for a number of years as wearing surfaces, continue to serve as components of the final heavy-duty pavement.

Middle photo supplied by J. D. Adams Mfg. Co.

Two helpful booklets which describe all types of Asphalt road and street construction can be secured without obligation by writing our nearest office.

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TEXACO ASPHALT

A Chicago Pneumatic 55 diamond drill, supplied with air by the Ingersoll-Rand 600-cfm compressor in the background, drills grout holes. *C&E Staff Photos*

Hills Are Incorporated In Core of Earth-Fill Dam

Material is obtained by cutting heights down to crest elevation; excavation totals 5,173,800 cubic yards

By RALPH MONSON, Field Editor

Material from one of the two hills which will be incorporated into the dam is loaded into Ford F8 trucks by a Lima 2-yard shovel. The excavator also levels a grade for the highway which will be built across the crest of the dam.

When The Pactola Dam, now being constructed in the Black Hills of South Dakota, is completed, the town from which it gets its name will have been inundated by the 5-mile-long man-made river which the structure will create on Rapid Creek. Also to be flooded is a section of U. S. 85A in the area.

The earth-fill dam is being built by the U. S. Bureau of Reclamation as part of the Missouri River Basin Project. Aimed primarily at water conservation, it will assure Rapid City, 13 air-miles to the east, and nearby Ellsworth Air Base a dependable domestic water supply. It will also aid irrigation and flood control of the valley which it guards.

The Adler Construction Co., Rapid City, is the general contractor. Ground was broken in November, 1952, and completion of the job is scheduled for June, 1955. The cost will approach the $5,000,000 mark. Approximately 1½ miles of new alignment for U. S. 85A is being constructed, as part of this contract, to carry the highway across the crest of the dam. The Bureau of Public Roads will award another contract for about 3½ miles of roadway to complete the new alignment from each end of the dam project.

Two hills are incorporated into the dam, with the main structure spanning the valley between the south bank and the first hill, dike No. 1 closing the gap between the two hills, and dike No. 2 stretching from the second hill to the north bank. A 742-foot tunnel, including 24 feet of exposed concrete conduit, will control the discharge from the reservoir. The tunnel passes through the base of the first hill. The overflow spillway is an unlined cut in the rock face of the same hill.

All normal flows of the stream will be taken care of through the outlet tunnel. At the spillway, the concrete pavement of the new section of highway will dip to permit the water to overflow if the level of the lake ever reaches that elevation.

The town of Pactola consists of little more than a store, a filling station, and a restaurant. Salvageable buildings are being moved to new locations outside the reservoir area. The removal and salvage of timber in the area to be flooded will be done under separate contracts.

Clearing and Grubbing

Areas occupied by the dam and the two dikes, as well as borrow areas and rock sources, were first cleared and grubbed. Using Mall and Disston saws, crews cut and salvaged all merchantable timber and posts from the stand of pine which covered most of the site. Caterpillar D8 tractors with dozers grubbed the stumps and piled them together with trimmings and slashings for burning on the site.

Footings for the dam and dikes were stripped of all topsoil, vegetation, loose rock, and other unstable or objectionable materials so that a sound rock surface was exposed. Strippings were wasted in specified areas outside the limits of the structures. Borrow areas were also stripped of topsoil and vegetable matter, exposing clay and gravel subsoil which was to make the impervious core of the dam.

The underlying rock formations on which the dam rests consist of am-

Quarry-run rock is unloaded in the zone 2 area by a Ford F8 dump truck. Larger pieces will be pushed into the zone 3 area by the rock rake on the Caterpillar D8 at right, which will compact zone 2 material as it travels back and forth.

phibolites, schists, and slates. These sedimentary rocks were formed in horizontal beds, but due to movements of the earth's crust, they are inclined as much as 70 to 80 degrees. To seal this rock against possible seepage, a grout curtain was placed on the entire 5,000 feet of the project center line.

Grout holes were drilled at 10-foot centers to varying depths. Deepest holes go down 250 feet—from the crest elevation on the hills to below the lowest foundation level. Through the dam and dike sections, a continuous grout cap of minimum dimensions of 3 x 3 feet is imbedded in the firm rock base over the row of grout holes.

Drilling and grouting were done by the Continental Drilling Co., Los Angeles, Calif. Air-powered diamond drills, three Chicago Pneumatic 55's and one Christensen, drilled more than 500 grout holes. Equipment for mixing and pumping the grout was located in a small building and connected to the string of holes by pipe and hose lines.

The grout mixer and agitator were manufactured by Continental in its own shops. Gardner-Denver grout pumps received the mix from the agitator and forced it through the lines to the 1½-inch pipes leading to the grout holes. The mixer, agitator, and pumps, as well as the drills, operated on compressed air supplied by an Ingersoll-Rand 600-cfm compressor furnished by the general contractor.

The cement-water grout, generally in a 1:8 ratio, was forced into the holes at pressures varying from less than 50 to more than 200 psi, depending on the depth of holes and nature of the rock. Some holes took as much as 1,050 sacks of grout while others were completely sealed with only a few sacks.

Building the Dam

Through the main dam section, a concrete cutoff wall rests on the grout cap. This wall varies from 5 to 10 feet in height with a top thickness of 9 inches and ½-inch batter per foot of height. Two feet of specially compacted embankment covers the sides and top of the wall.

The dam cross section is divided into three zones. The center, or zone 1, is the impervious core of selected silt, clay, sand, and gravel soils. Coming to a peak at the crest of the dam, this core slopes at about 1½ to 1 on the upstream face and somewhat steeper on the downstream side. Zone 2 is a blanket of selected rock fines, measuring from about an 8-inch size down, covering both faces of the impervious core and underlying an area of the core on the downstream face for drainage.

The outer blanket, or zone 3 material, consists of rock from 8 inches to 1 cubic yard in size and varies in thickness from a minimum at the crest to a maximum at the toe. The finished slope of the zone 3 material is 2½ to 1 on the upstream face and 2 to 1 on the downstream side. Dike sections are similar to the main dam except that they do not have the cutoff wall of concrete over the grout cap.

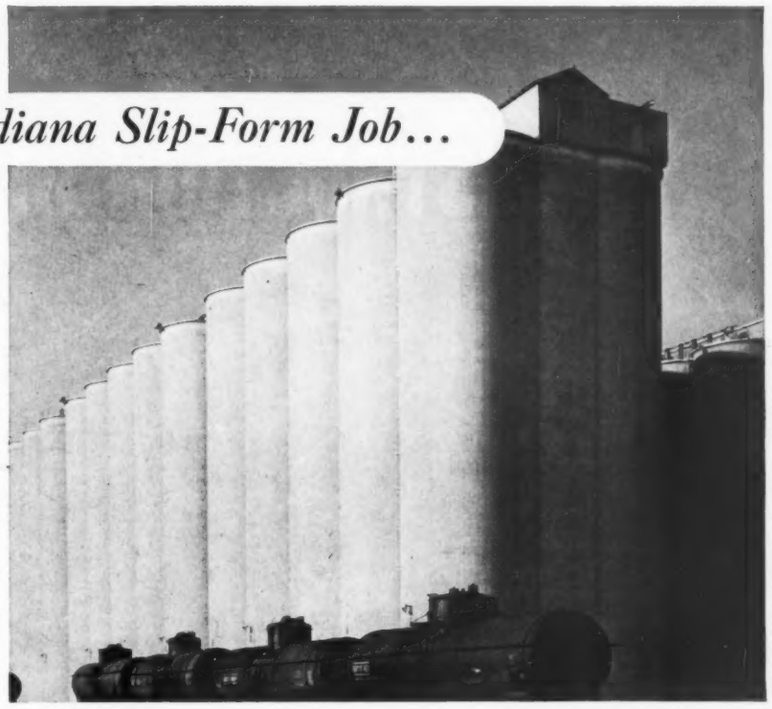
Material for the impervious core is hauled from borrow pits in the reservoir area. For the shorter hauls, up to about 1,000 feet, Adler uses LeTourneau and Wooldridge scrapers drawn by Caterpillar D8 tractors. From the more remote borrow pits the material is moved by four Caterpillar DW20 tractors, pulling Caterpillar No. 20 scrapers, and four self-propelled Wooldridge Terra-Cobras.

Of the 13 Caterpillar D8 tractors on the project, two have been modified by the McCoy Co., Denver, Colo., with the installation of torque convertor drive and engines similar to those used in the DW21. One of these push-loads the DW20 scrapers and the Terra-Cobras, and the other is equipped with a dozer and does similar work.

Areas in which the zone 1 material is being placed are beehives of activ-

(Continued on next page)

A special Caterpillar D8, equipped with torque-converter drive, pushloads a Caterpillar No. 20 scraper carrying material for the impervious core of the dam.



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OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

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A UNIVERSAL ATLAS PRODUCT

C & E-159

Makes Better Concrete at No Extra Cost

UNITED STATES STEEL HOUR — Televised alternate weeks — See your newspaper for time and station.

(Continued from preceding page)

ity. With 12 scrapers hauling, it is not infrequent that three or more will be unloading at a time. Three Caterpillar D8 tractors pulling McCoy and Gebhard double-drum sheepsfoot rollers shuttle back and forth compacting the 6-inch layers of material. Another D8 uses its dozer to level off the loads and also scarifies the surface with a rear-mounted McCoy manipulator bar.

Adjacent to the rock hills, workmen with Ingersoll-Rand pneumatic tampers apply special compaction to areas where the larger sheepsfoot rollers are not effective. Coupled with this activity is the continuous hauling of zone 2 and 3 material to adjacent areas. A well planned system of one-way haul roads and a well conducted operation on the fills eliminate congestion and permit all haul vehicles to operate at maximum speed. Haul roads are maintained in excellent condition by two motor graders—a Caterpillar No. 12 and a Galion 102—and are sprinkled frequently by a 2,700-gallon Euclid water wagon to control dust.

Rock From Hilltops

Rock for zone 2 and 3 material is obtained by removing the tops of the hills which are above crest elevation of the dam. Removing these hilltops not only provides a convenient source of material, but also provides a level grade for the highway across the entire length of the dam.

Because of the nearly vertical angle of inclination of the rock seams, the quarrying is somewhat unusual. Horizontal drill holes 24 feet deep are drilled near the bottom of a 40-foot vertical face. One Ingersoll-Rand and six Cleveland wagon drills, using Ingersoll-Rand tungsten carbide bits, drill the holes in three horizontal rows. The holes in the lower row slope down, those in the center row are horizontal, and holes in the top row slope upward from the face.

The holes are loaded with Du Pont 60 per cent special gelatin at the rate of 0.4 to 0.6 pound per cubic yard and sealed with 6 to 7 feet of dirt stemming. Instantaneous electric caps fire the top row of holes first, and millisecond delay caps with delays of 0.025, 0.050, and 0.075 second shoot the middle and lower rows in succession.

The blast from the top row takes the load of the rock above, permitting the shots in the middle and lower rows to shear out the bottom. The material above then falls down. The high velocity of the 60 per cent special gelatin is especially effective in shearing out this bottom and producing a maximum quantity of usable rock per shot. Normal shots produce 4,000 to 6,000 or more cubic yards of rock.

A Du Pont CD30 condenser-discharge-type blasting machine is used to detonate the charges. This battery-type machine with push-button discharge develops more power than the standard plunger type and can fire as many as 1,500 holes.

When weather reports indicate electrical storms are likely to occur in the area, holes are loaded with Primacord instead of electrical caps. If the storm actually develops, all work in the vicinity of loaded holes stops until the storm has passed or the shot is detonated.

Rock Placed by Rake

After a shot has been fired, one of the two rock shovels, a Lorain 820 or a Lima 802, moves in to load the rock into trucks which haul down to the dam or dikes. Four 11-cubic-yard end-dump Euclids and six F-8 Fords with tandem axles and 10-yard Anthony dump boxes haul the quarry-run rock, which is dumped in the zone 2 areas on either side of the impervious core.

Caterpillar D8 tractors with Fleco rock rakes work over each load of rock as it is dumped, compacting the smaller sizes in the zone 2 area as they rake out the larger rocks and push them into zone 3. The resulting fill appears to be well graded through zones 2 and 3 from the finest material adjacent to zone 1 out to the large rock on the outer face of zone 3. No further compaction of materials in these two zones is required.

Outlet Structures

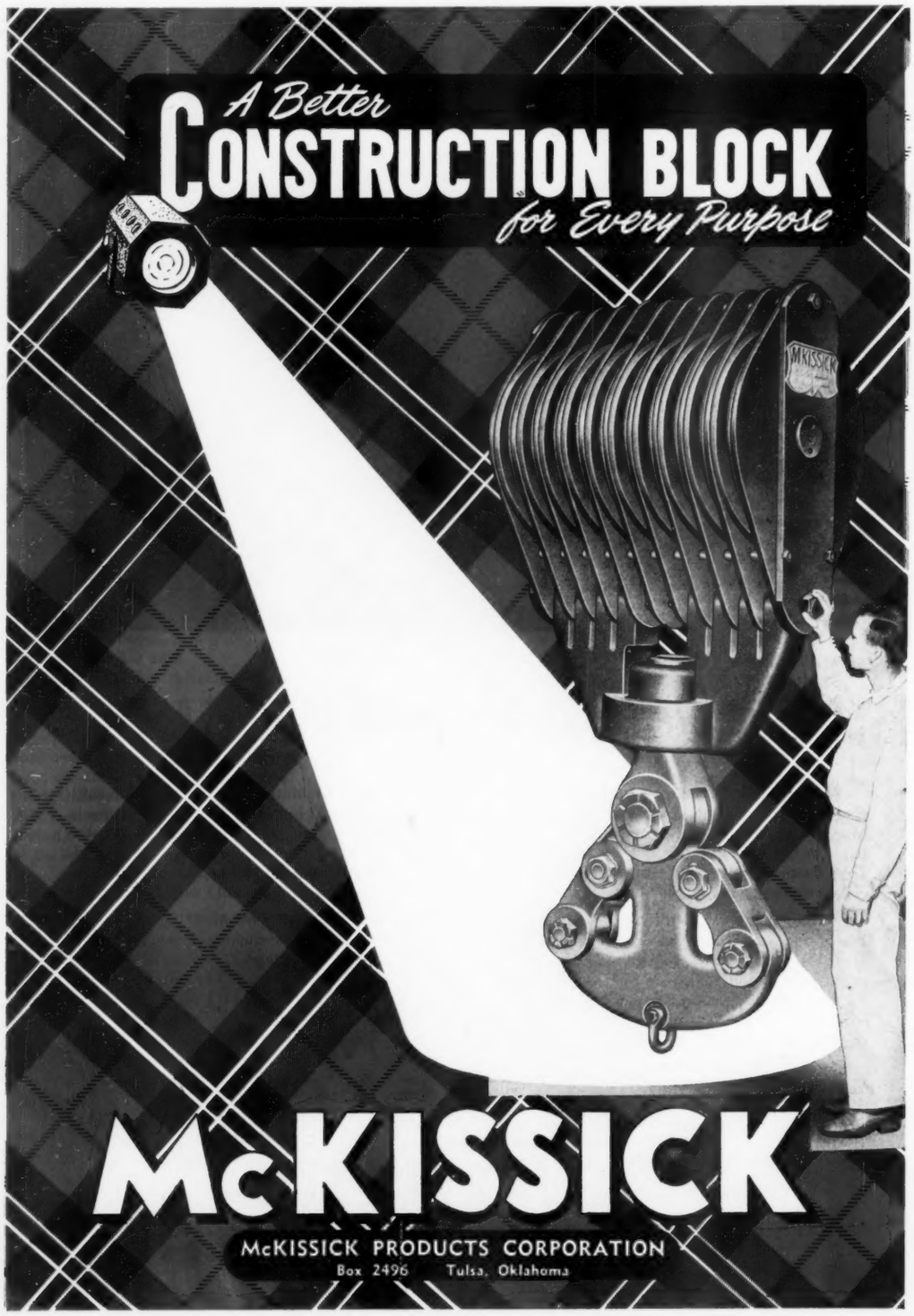
Since the primary purpose of the dam and reservoir is to maintain a uniform flow of water in Rapid Creek, there are no ducts or conduits to lead water away. The only structure required to regulate the flow from the reservoir is the outfall tunnel with its control gates. The tunnel penetrates through 718 feet of solid rock at the base of the hill just north of the main dam.

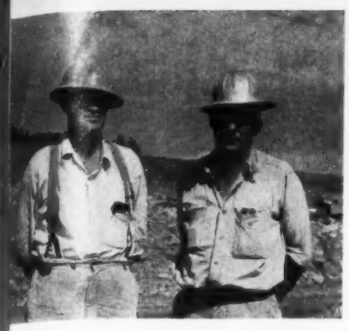
Worthington drills on a jumbo line-drilled for the tunnel. After blasting, rock was mucked out by an Eimco Finlay mucker into cars on a narrow-gage railroad track laid in the tunnel as the work progressed. A GM diesel locomotive pulled the cars to the dump site outside the tunnel entrance.

Forms for the concrete tunnel lining were carried on the rails. An air-operated placing gun was used to force concrete into the forms. A concrete-lined channel and stilling basin extends 180 feet downstream from the end of the tunnel, after which an open channel on rock bottom leads to the normal stream bed.

At the upstream end of the tunnel, an inlet structure, which will be submerged at all normal reservoir levels, is equipped with trash racks to screen out debris which might damage or foul the gates. Control gates are located near the mid-point of the tunnel with an access shaft rising 200 feet to the crest of the dam where a shaft house will be constructed.

Materials for all concrete construction are batched from a central





Eugene B. Anderson, left, is chief inspector for the Bureau of Reclamation for the Pactola Dam project. At right is A. B. Farnworth, general superintendent for the general contractor, Adler Construction Co.

C&E Staff Photo

plant at the contractor's yard. Coarse aggregate is supplied the Contractor's Crews from a crushing plant in Rapid City and trucked 22 miles to the site. Fine aggregate is a river sand hauled from Oral, S. Dak., almost 85 miles away.

Coarse aggregate is rescreened at the batch plant through a three-deck 3 x 8-foot Cedarapids shaker screen to remove excess fines developed in hauling and handling the material and to correct any possible segregation of sizes. From the screen, the materials flow to a 75-ton four-compartment bin, from which they are weighed into batch trucks on a set of Noble scales. Cement in paper sacks is trucked to the project from the mill in Rapid City.

Wherever it is feasible, concrete is mixed in a Rex double-drum paver and placed with the paver bucket. Where this type of placement is impossible, the concrete is handled by cranes with bottom-dump buckets. On some small pours a Rex 16S and a Jaeger 16S mixer replace the big paver.

Servicing Equipment

Complete overhaul facilities, as well as the requirements of daily service, are provided in Adler's shop layout. Separate Butler and Armco metal buildings are set up for the truck repair shop, heavy equipment shop, and two warehouses. A new Butler building houses the office. Supplied with all the necessary tools and equipment, such as gas and electric welders, air compressors, and impact wrenches, the mechanics in these shops make all repairs from minor adjustments to complete overhauls.

Lubrication and other daily servicing are done in the field from two Ford trucks equipped with Alemite lubrication systems. Another truck carries a 1,000-gallon tank of diesel fuel which can be pumped to the equipment by air or electricity. Air compressors and portable Kohler generators mounted on the service trucks supply compressed air and electric power.

Daily lubrication is done between shifts or after hours by the crews of the lube trucks. Oil changes and other periodic servicing are normally done on Sundays when the work is shut down. Crews on dirt-moving and concrete operations work a nine-hour shift six days a week. Rock crews are divided into two shifts of nine hours each. Grouting operations are carried on around the clock by three shifts working eight hours a day, seven days a week.

Quantities

Estimated quantities of some of the major items in the contract are:

Excavation	963,800 cu. yds.
Embankment in zone 1	2,100,000 cu. yds.
Embankment in zone 2	660,000 cu. yds.
Embankment in zone 3	1,450,000 cu. yds.
Drilling grout holes	47,500 lin. ft.
Pressure grouting	51,000 sacks
Concrete	5,340 cu. yds.

Personnel

General supervision of the project is handled by Harold C. Adler, owner of the Adler Construction Co. General superintendent in charge of rock excavation and earthwork is A. B. Farnworth. Concrete construction is under the supervision of Nolan Wallace, and equipment maintenance is under the supervision of Hans A. Schilling.

The project falls within the jurisdiction of the Missouri-Oahe District of the Bureau of Reclamation, of which Joseph Grimes is district manager. Construction engineer on the project is Frank E. Goehring. On his staff are Byron B. David, field engineer; E. F. Pederson, office engineer; Eugene B. Anderson, chief inspector; and D. W. Hansen, chief of surveys. The project was designed in the Denver office of the bureau, under supervision of L. N. McClellan, chief of design and construction. THE END

Manual on Lubricating And Spraying Equipment

■ A combined catalog and selection manual is available on the Alemite Versatal line of material-handling equipment for lubrication, spraying, and such specialized uses as applying highway expansion-joint sealer.

A typical Versatal system consists of an air-operated pump which removes material from the original container and forces it, at desired pressure and rate of delivery, through a pipe, tubing, or hose to spray guns, extruding guns, or other types of control valves at the point of application. Examples show how all types of materials in these applications are handled.

A section of the booklet is designed as an aid in ordering the proper combination of pumps, hoses, control valves, and other elements to obtain the most efficient and economical system.

To obtain this literature write to the Alemite Division, Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill., or use Request Card at page 18. Circle No. 68.

CONTRACTORS SAVE UP TO 40% ON SHORING COSTS

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Contractor: Mandelci & Benvenuti, New London, Conn.
Superintendent of Construction: Raymond Banks

HĪCO* Girders span 29 feet without support Can be reused 100 times or more . . .

HĪCO Girders offer contractors unprecedented savings in time and in the cost of supporting forms for cast-in-place or precast concrete construction. Adaptable to spans of any length, they are quickly erected and stripped. In less than one hour, four men can erect or take down all the HĪCO Girders required to support 800 square feet of forms.

And because they can be used again and again — 100 times or more — HĪCO Girders eliminate the waste in timber shoring, pay for themselves in the savings they effect.

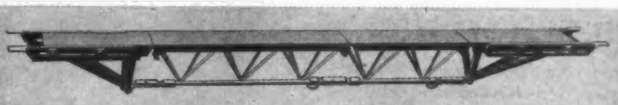
HĪCO Girders provide an exclusive and convenient method of cambering. By tightening a turnbuckle the girder is bowed upward by a predetermined amount based on the length of span and the load to be applied.

As concrete is poured, or precast blocks are set in place, the girders are deflected by the load to a perfectly straight line and held immovably in position until the forms are stripped. Stripping is accomplished by loosening turnbuckle and then disengaging end slides from their supports and removing girder in one piece.

Widely Adaptable—HĪCO Girders may be used with equal facility in reinforced concrete or fireproof structural steel construction. Because they require no shoring, height of ceiling is never a problem. The small sections also readily form arches, tunnels, and irregular shapes.

Technical Help Furnished—From drawings furnished by contractor, Webrib engineers make a detailed layout showing the number and type of HĪCO Girders required. These are shipped to the job site already assembled and marked for identification. Although cambering is quickly, easily done without special tools, a Webrib engineer will visit the site and work with contractor personnel to familiarize them with all phases of use.

Lease or Buy—HĪCO Girders are available on lease with the option to buy; lease can be applied against purchase price. They can be purchased outright if desired. Reuse permits the cost of HĪCO Girders to be amortized at so low a rate per job that savings they effect soon pay for them. Write for Bulletin H-102 for complete technical data and price information.



Girders come in 2, 3, 4 ft. sections. End sections adjust from 20-26" and 24-33". Sections combine for desired length. Cambered before or after erecting, ceiling weight deflects girders, keeps them straight and level through curing period.

HĪCO* GIRDERS

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*HĪCO is a trade mark of the Webrib Steel Corp., makers and distributors of HĪCO Girders.

Forest Road Is Built On New Alignment

A LaPlant-Choate TS-300 scraper, pushed by an International TD-24 tractor, loads sandy material on the Michigan Forest Highway project. *C&E Staff Photo*

COMPLETELY REBUILT from alignment to surfacing, State Route 65, the Michigan Forest Highway, is now a safe and pleasant route. Running from Hale northward to Curran in Alcona County, the road has smooth superelevated curves. A wide streamlined roadway section and dust-free gravel surface have replaced the old narrow road with its sharp turns and untreated surface, which was alternately dust and mud. Flat slopes, carefully seeded and mulched, assure that this Huron National Forest area will be enhanced by the new highway.

The 14-mile section from Glennie to Curran was graded and surfaced by William H. Gilliland Co., Alpena, Mich. The grading job included more than 890,000 cubic yards of excavation and borrow and 476,000 cubic-yard-miles of overhaul. Averaging these figures shows that nearly half a mile of overhaul was required for each yard of dirt. Drainage structures included 6,700 linear feet of pipe culvert, varying from 15 to 72 inches in diameter. The contract figure was $633,973.69.

Because of the long hauls required, Gilliland moved most of the dirt with rubber-tired scrapers. Six Super C Tournapulls with 12-yard scrapers teamed with three 14-yard LaPlant-Choate TS-300 scrapers for the long hauls. On some of the shorter hauls, dirt was moved by three International TD-24 tractors with LeTourneau Model W scrapers and a Caterpillar D8 tractor with LaPlant-Choate 14-yard scraper. An International TD-24 pusher and a Caterpillar D8 with dozer push-loaded the scrapers in cuts and borrow pits.

The rubber tires of the heavy scrapers compacted the material thoroughly as the machines spread the dirt over the surface in thin layers. Austin-Western and Adams motor graders put the finishing touches on the grade and slopes. A truck-mounted Schield Bantam dragline proved useful in dressing the fill slopes where the dirt had sloughed down into wooded areas. The small dragline bucket recovered the material from among the trees and pulled it to the top of the slopes where it could be picked up by a scraper or motor grader. Backslopes were seeded and mulched with straw when grading was finished.

Gravel Surfacing

Gilliland produced gravel for surfacing from two pits adjacent to the right-of-way near the south end of the job. A Diamond 18 x 36-inch jaw crusher and 2½-deck 4 x 10-foot screen reduced the material to the minus ¾-inch size required. A Bay City dragline with one-yard Hendrix perforated bucket excavated material from the pit and fed it to a receiving hopper. A reciprocating feeder on the hopper deposited the pit-run gravel on a 24-inch 40-foot-long conveyor belt which led to the crusher.

A simple job-made device eliminated the large rocks which abounded in the pit. A 2 x 8 plank, 8 feet in length, was supported above the conveyor belt between the hopper and the crusher. The plank crossed the belt at about a 45-degree angle, clearing it by 5 inches. As the material moved along the belt, pieces larger than 5 inches were brushed off by the plank and fell in a pile. The rocks were saved for ditch riprap.

Crushed gravel, trucked to the

TEXACO HELPS ISBELL
COMPRESSOR UPKEEP

●Hard working compressors and rock drills, like those in the pictures, require effective lubrication—Texaco. Isbell Construction Company, one of Nevada's biggest highway builders, has been using Texaco for years to keep them—and millions of dollars' worth of other equipment—running smoothly and economically.

TEXACO

TEXACO

More than 890,000 cubic yards of excavation is required; dirt is hauled and compacted by rubber-tire scrapers

Material is placed on the fill by Tournapulls. The dirt, spread in thin layers on the roadbed, was compacted by the heavy rubber-tired machines as they worked in the fill area. *C&E Staff Photo*

road in hired trucks, was spread uniformly to the required thickness by an ingenious attachment on a Caterpillar D8 tractor. Two 8-inch channels 14 feet long were attached to the bottom corners of the 10-foot dozer blade to extend straight ahead of the tractor. On the front end of each channel was a truck wheel with 20-inch rim and 8.25 tire. A shorter channel, welded to the midpoint of each long channel, was attached to the upper corner of the dozer blade by an adjustable screw. The triangular space formed by the long and short channels was filled with a plate, which was welded in place.

Trucks dumped gravel into the large U made by the channels and the dozer blade. With the forward wheels running on the subgrade and the track on the surfacing which had already been spread, the screws at the edges of the dozer blade could be adjusted for proper depth of spread. Thereafter, the wheels supported the blade, and it was only necessary to make occasional checks for accuracy of the spread. A course of any desired depth was spread 10 feet wide by the machine in a single pass.

Personnel

Robert Gilliland supervised the project himself. Grading foreman was Hugh Loyer. Richard Glawe took charge of the placing of culverts and construction of the concrete headwalls. Emerson Smith was foreman of the gravel production. Harold Armstead was project engineer for the Michigan State Highway Department. H. J. Rathfoot is road-construction engineer, and Charles M. Ziegler is state highway commissioner. THE END

Book on Modular Method

The use of modular dimensioning in planning and constructing buildings is described in a publication issued by the Housing and Home Finance Agency. Titled "Building Better From Modular Drawings", the booklet treats the system of design and construction which uses transparent 4-inch cubes or modules as basic units of measure.

In addition to showing how blueprints may be simplified with the system, the booklet illustrates the use of certain standard building materials whose dimensions may be calculated according to the modular method. Estimating and broad construction procedures are discussed according to the system.

The booklet, which has been endorsed by the Associated General Contractors of America, is priced at 20 cents and may be ordered from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

"Highways in the U. S." Is Issued in New Edition

A new edition of "Highways in the United States", describing the history, administration, financing, and use of the country's highway systems, has been published by the U. S. Bureau of Public Roads.

Information on the growth and operation of federal aid for highways is also included. Statistical material on motor vehicle registrations, fuel consumption, disposition of highway revenue, etc., is tabulated.

The pamphlet may be obtained for 20 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

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Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

Workmen and material have access to piers with this trestle which carries a pipeline and narrow-gage railroad. In the foreground is a completed pier. In the background, steel sheet piling for a cofferdam is driven 26 to 28 feet into the riverbed. *Ray Day Photo*

Bridge Pier Concrete Is Pumped From Shore

Pipeline is carried on work trestle from mixing plant on bank; substructure work on Flathead River span is done through winter

TAKING ADVANTAGE of the low water stage in Montana's Flathead River this past winter, James Crick & Sons, Spokane, Wash., pushed substructure work on a $497,900 bridge to completion. The bridge, being built for the Montana State Highway Commission, was started last October and is expected to be completed this fall.

The span is located north of Big Fork, a mile from the point where the Flathead River empties into Flathead Lake, and is being constructed to handle the valley's automobile traffic, which has been on the increase for the past several years. Winding down the west shore of the lake is U. S. 93, which links the city of Kalispell with points in the southern part of the state. On the opposite side, an east shore route, built within the past five years, runs to Big Fork. The Flathead River Bridge, together with a smaller structure across Swan River near Big Fork, is part of a comprehensive traffic plan which will tie the east shore route to U. S. 93 just south of Kalispell.

The 686-foot continuous-girder structure, designed for secondary traffic, has two 19-foot approach spans, two 144-foot inshore spans, and two 180-foot river spans. The height of the piers is 54 and 55 feet; abutment height is 32 feet 2 inches.

The piers, of reinforced concrete, rest on untreated wood bearing piles. Each pier has a heavy steel nose which will serve as an icebreaker. Two lines of heavy steel girders will be used directly over the reinforced-concrete supporting piers and abutments. These are 7 feet ½ inch deep at the ends of the bridge, and 10 feet ½ inch deep over the center piers. They are tied together with heavy steel diaphragms, topped by two rows of 18 WF50 stringers which will support a reinforced-concrete deck. The bridge will be of all-riveted assembly, and it will measure 24 feet wide, curb to curb, with a 1-foot 10-inch sidewalk. A steel handrail will run along both sides.

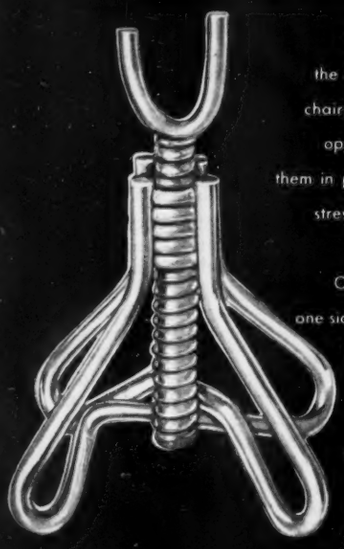
Substructure Built Rapidly

Ordinary river depths under the bridge vary from 23 feet at low water to about 40 feet at high water. When contracting crews moved onto the job, the river was at normal level but falling rapidly because of the dry summer. Gambling on a mild winter, I. B. Munson, owner of James Crick & Sons, and Rod Harris, general superintendent, decided to push substructure work as rapidly as possible, despite the cold weather.

Of the three river piers—Nos. 3, 4, and 5—No. 4 was the largest. It called for steel sheet-pile cofferdam enclosures 18 x 46 feet. Piers 3 and

Richmond Puts a New Twist on Adjustable Screed Chairs

THEY CAN'T SPREAD!



The picture tells you why! Note that the legs of Richmond's new adjustable chairs are crossed . . . that the diagonally opposite legs are joined. This locks them in place permanently, and distributes the stress of the load evenly to all 4 legs! *They can't ever spread!* On ordinary screed chairs, legs on one side are never linked to legs on the other. Result? Legs spread . . . screeds may misalign and deflect under load . . . time and effort are wasted. This doesn't have to happen to you anymore. Insist on Richmond's new adjustable screed chairs with the legs that can't spread!

RICHMOND provides you with 34 different Adjustable Supports for screed-finishing concrete floors, runways, decks and curbs. All come with adjustable cradle heads for pipe, flat bar or special shapes—or with top-adjusting combination swivel-head cradle for pipe or T-bar.

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Pipe Cradle • Swivel-Head Cradle • Flat Bar Cradle

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Piles for the inshore cofferdam are driven by a Lima crane and McKiernan-Terry hammer. All concrete for the bridge, placed by the Pumpcrete method, was mixed in the plant in the background. *Ray Day Photo*

A Lima crane in background, with McKiernan-Terry pile hammer drives sheet piling for a pier on the Flathead River crossing in Montana. In the foreground, a cofferdam is being dewatered by a Fairbanks-Morse pump. *Ray Day Photo*

5 required cofferdams 18 x 42 feet. Wooden fender piles were driven to form a rough outline for each cofferdam, and were braced from top to bottom with tight cables. Just outside the sheet-pile limit lines a bolted-timber template was erected.

Pile driving was done by a Lima 701 crane with a 72-foot boom. The Lima was lashed to the center of a 48-pontoon steel barge capable of supporting 220 tons without tipping dangerously. Mounted on the barge were an 80-hp Kewanee boiler, which supplied steam for a McKiernan-Terry 9B3 pile hammer, and a small 40-hp Cleaver-Brooks boiler. As driving started, the pontoon barge was supported by a tight line stretched across the river and controlled by a small American 3-drum hoist located on the right bank.

Each of the three cofferdams was built in the same manner. As soon as the fender piles and template were completed, the Lima built a temporary wood-pile trestle just upstream from the bridge location. This framework was topped by 12 x 12 Douglas fir caps, and finished off with a 4-inch timber deck and a dinkey railroad. The trestle made the bridge piers accessible to shore workmen.

AP3 and M-118 steel sheet piles for the cofferdams were driven 26 to 28

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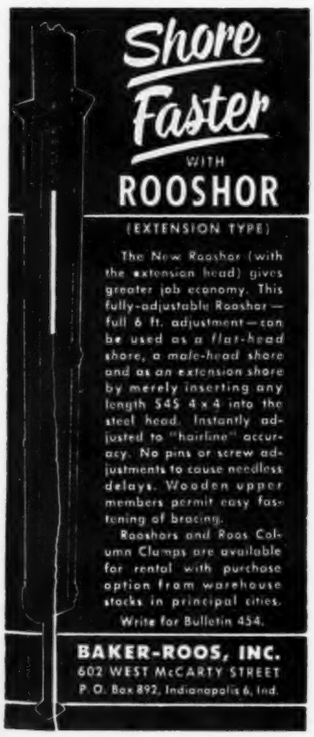

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(EXTENSION TYPE)

The New Rooshor (with the extension head) gives greater job economy. This fully-adjustable Rooshor—full 6 ft. adjustment—can be used as a *flat-head* shore, a *male-head* shore and as an extension shore by merely inserting any length S4S 4 x 4 into the steel head. Instantly adjusted to "hairline" accuracy. No pins or screw adjustments to cause needless delays. Wooden upper members permit easy fastening of bracing.

Rooshors and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities.

Write for Bulletin 454.

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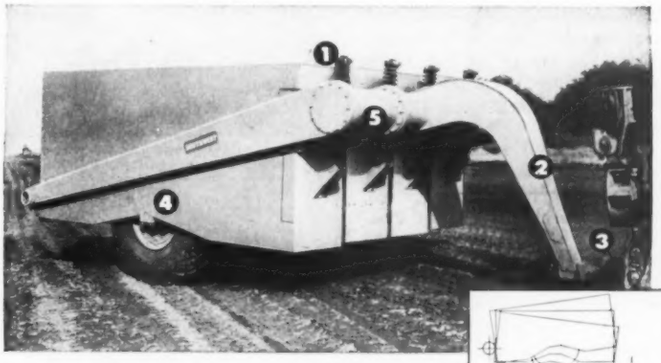
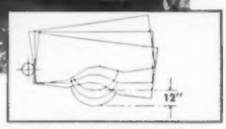
STUDY AND COMPARE THESE **Southwest FEATURES**



COMPACTION ROLLER

1. Greater wheel oscillating freedom with each wheel mounted in independent weight box unit.
2. Heavy duty, reinforced gooseneck and sectionalized hauling yoke.
3. Swivel hitch with Timken roller thrust bearing.
4. Each wheel equipped with two large Timken bearings.
5. Sectionalized hauling yoke permits use of 3 to 6 wheel units.

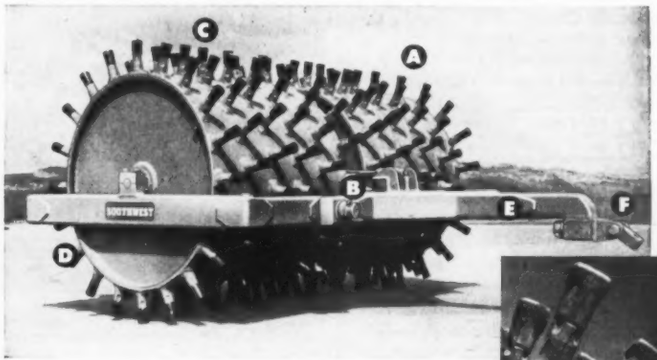
Compaction roller



Closely spaced wheels oscillate independently and each wheel has an up and down movement of 12 inches.

TAMPING ROLLER

- A Full oscillating double drums.
- B Timken roller thrust bearing at oscillating pins.
- C Two-piece foot with replaceable tips—permits changing size or replacing tip in the field without welding.
- D One-inch steel drum shell.
- E Heavy duty, reinforced box steel frame.
- F Large swivel hitch with Timken roller thrust bearing.



Tamping roller

Simply drive off the old tips and drive on the new tips on the job—no welding required.

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ALHAMBRA, CALIFORNIA

(Continued from preceding page)

feet into sand, silt, clay, and mud, and topped off high enough to stand the pressure of a 15-foot rise in the river. Two sets of 12-inch H-beam bracing rings, previously fabricated on the river bank, were lowered inside each cofferdam as it was finished. These braced the cofferdams while excavation was in progress. The Lima then set its pile hammer aside and excavated inside the cells with a Wellman clam bucket. The material, dumped back into the river alongside the piers, was washed downstream by the river. Excavation was completed down to elevation 2844, approximately 67 feet below the surface of the water.

With excavation finished, untreated spruce timber piles, designed to give a bearing value of 28 tons per pile, were driven. Plans called for 65 piles under piers 3 and 5, and 70 under pier 4. After all bark had been peeled off, these 60 to 72-foot-long piles were prepared so that they could be driven without leads.

The end of each pile was squared off at 14 inches by a Wisconsin-engine-driven power saw with a manually operated travel arrangement. A truck-mounted Pitman Hydra-Lift helped to handle each pile accurately and fast. The 14-inch square end of each pile was fitted exactly into a driving skirt rigged up for the McKiernan-Terry pile hammer. The hammer, equipped with a snorkel, operated as far as 30 feet under water. Driving was done with the aid of an Ingersoll-Rand 315-cfm air compressor.

During this operation, the cofferdam remained filled with water. But after the wood piles had been driven, the cell was sealed off by an 8-foot-thick block of concrete placed full width inside the cofferdam. Type II portland cement was used for the mix, and Valley Sand & Gravel Co., commercial suppliers from Kalispell, furnished aggregates and sand. The materials were batched on the right bank by a three-compartment Binan-batch. Concrete for both seal and footings was weighed and mixed in 1½-cubic-yard batches according to Montana's Class S mix formula as follows:

Cement	94 lbs.
¼-inch-minus aggregate	148 lbs.
¾ to ¼-inch aggregate	139 lbs.
1½ to ¾-inch aggregate	139 lbs.
Air entraining agent	None
Cement factor	7 sacks per cu. yd.
Placing slump	6 to 7 inches
28-day compressive strength	6,000 lbs. average

The correctly proportioned concrete batches coming from the weigh hoppers were mixed by a 1½-cubic-yard Mixermobile, and the fresh material hoisted directly to a Rex 200 single Pumpcrete machine. All concrete for the entire bridge—including the tremie material—was placed by the Pumpcrete method. In the case of the tremie-placed seal, concrete was piped to a Gar-Bro hopper carried by a Lima crane. With the aid of a long tremie pipe, the concrete was placed in the cofferdam to form the 8-foot-thick seal. After the concrete had set, the cofferdam was unwatered.

Each cofferdam was unwatered by a Fairbanks-Morse 12-inch electric-driven machine, a 10-inch Pacific, and a 6-inch Pacific pump. After a cofferdam was pumped down to the concrete seal, only the 12-inch pump continued to work to keep the cofferdam dry during subsequent work.

Wood piles protruding through the seal were squared off by a Wright power saw, and wooden forms were placed for the 3-foot-thick footing pour. Pad pours over the footings measured 3 feet 6 inches thick for piers 3 and 5, and 4 feet 6 inches thick for pier 4. Homelite high-cycle vibrators and 2 Ingersoll-Rand air-driven vibrators were used on these and subsequent pours for concrete consolidation.

The 39-foot 6-inch-high pier pours are made in two lifts. Forming for the piers is conventional, although spruce lumber is being used almost exclusively. Spruce shiplap backing and ¼-inch plywood facing is being nailed to 2 x 4 studs on 16-inch centers with 2 x 4 and 2 x 6 spruce wales. In all web walls, 2 x 4 wales are used to accommodate Burke snap ties and form bolts.

Structural steel members are being handled on the right bank of the river. Trucked in and unloaded at the site, they are picked up by the barge-mounted Lima crane, which moves them to the point of placement. The same central-yard prefabricating methods and the same DeWalt power saw equipment used on the substructure are being used for the conventional wood forming for the deck. The Class AD concrete for the deck uses the same mix material as used in the piers.

Personnel

All work on the project is under the general supervision of Scott P. Hart, state highway engineer for the Montana State Highway Commission, with Ray Spurzem in charge as division construction engineer at Kalispell. Richard Larson is resident engineer. I. B. Munson is in personal charge as one of the construction company owners. R. L. Harris is general superintendent; John A. Nelson, carpenter foreman; and L. V. Brock, pile driver foreman.

THE END

Across the boar
...the choice i

CLEARING! D318 powers dragline for S. J. Groves & Sons (Elyria, Ohio) pioneering for an overpass.

SAND! DW21 with No. 21 Scraper pulls out of borrow pit of wet sand for J. E. Pirtle & Tanner Bros. (Jeffersonville, Ind.).

CLAY! DW21 is push-loaded for Peter Kiewit Sons' Co. and Cunningham Co. (Columbus, O

MUD! D8 equipped with No. 8A Bulldozer working in clay at overpass for V. N. Holderman & Sons (Columbus, Ohio).

DRAINAGE! D8 with No. 80 Scraper maintains ditch alongside fill on Winston Bros. Co. (Minneapolis) contract.

HAUL ROADS! No. 12 Motor G maintains road for Holloway & T son Construction Co. (Livonia,

TOLEDO

SANDUS

Over 50 contractors are pushing the nation's newest turnpike to completion through sand, bog, clay and rock. As one man, they've turned to big yellow equipment. Eighty-five per cent of their crawlers, 83% of their motor graders are Caterpillar—over 650 pieces of earthmoving equipment in all!

The roster of contractors at work on the Ohio Turnpike reads like a blue book of America's road builders. And from one end of this $326 million road to the other, they have given Caterpillar the biggest vot confidence in road building history.

Collectively they have more than 650 piece Caterpillar-built earthmoving equipment on the j and that doesn't include scores of CAT* Diesel En and Electric Sets. *They have far more Caterpillar e ment at work than all the other makes put toge*

Yet there is no pattern in the type of work b done by this tremendous fleet of Caterpillar equip For on its 241 miles, the Ohio Turnpike presents e possible type of terrain and soil — from river botto mountains, from quicksand and bog to clay and r

Concrete-Pouring Problem Is Solved by Mix Control

In constructing a series of 8-foot-deep half-cone concrete pits at the El Segundo Division of Douglas Aircraft Co., Inc., contractor MacIsaac & Menke Co., Los Angeles, Calif., developed a unique method of pouring the units to cut the high cost of erecting cone-shaped forms.

MacIsaac & Menke Co. was also the contractor on foundations for eight new high-cycle radial arm routers for the Douglas plant. The half cones constructed by the company will be used as chip-removal pits for the arm routers. Walls of the half cones angle upward from 45 to 60 degrees to form an opening nearly 15 feet in diameter at the top of the pit.

An 8-foot chip-removal pit at the Douglas Aircraft plant in El Segundo, Calif., is finished with a 2 x 4 screed which pivots on a pin at the bottom of the half-cone.

Contractors on previous jobs in the plant had attempted to form the side of the cones by pressure shooting the concrete, but were unsuccessful because of difficulties involved in screeding the material. The Los Angeles contractor came up with the answer after reasoning that the mix had to be applied by a method that would allow for constant control of the moisture content as the walls of the cone grew higher.

Slump tests were carried out in the field to determine the exact water content desirable at the various cone levels. With this done, the walls of the cone were poured with concrete of three different slumps. The bottom third portion was poured with a 2½-inch slump, the middle third with a 3½-inch slump, and the top third with a 4½-inch slump.

A 2 x 4 screed, pivoting on a pin at the bottom of the cone, screeded the steeply sloping mix, and a 2 x 2, shaped into a half-circle, served as a guide angle for the upper end of the screed. Hand troweling completed the job.

Highway Guardrail

■ A new deep-beam highway guardrail, designed to provide maximum protection against damage to vehicles and serious injury to car occupants, is manufactured by the Tuthill Spring Co., 760 W. Polk St., Chicago 7, Ill. Mounted directly to each guard post with a single bolt, the new rail requires no brackets, end tension, anchor rods, or deadmen.

This simplified installation is made possible by the deep convex design, which reportedly provides adequate strength and transmits the shock of impact directly to the post. Vehicles cannot pocket behind a post, according to the manufacturer, but are automatically deflected back to the pavement at a minimum angle. Overlapping construction in the direction of travel allows the car to slide without obstruction.

For further information write to the company, or use the Request Card at page 18. Circle No. 92.

ARBA Schedules Road Show And Convention in Chicago

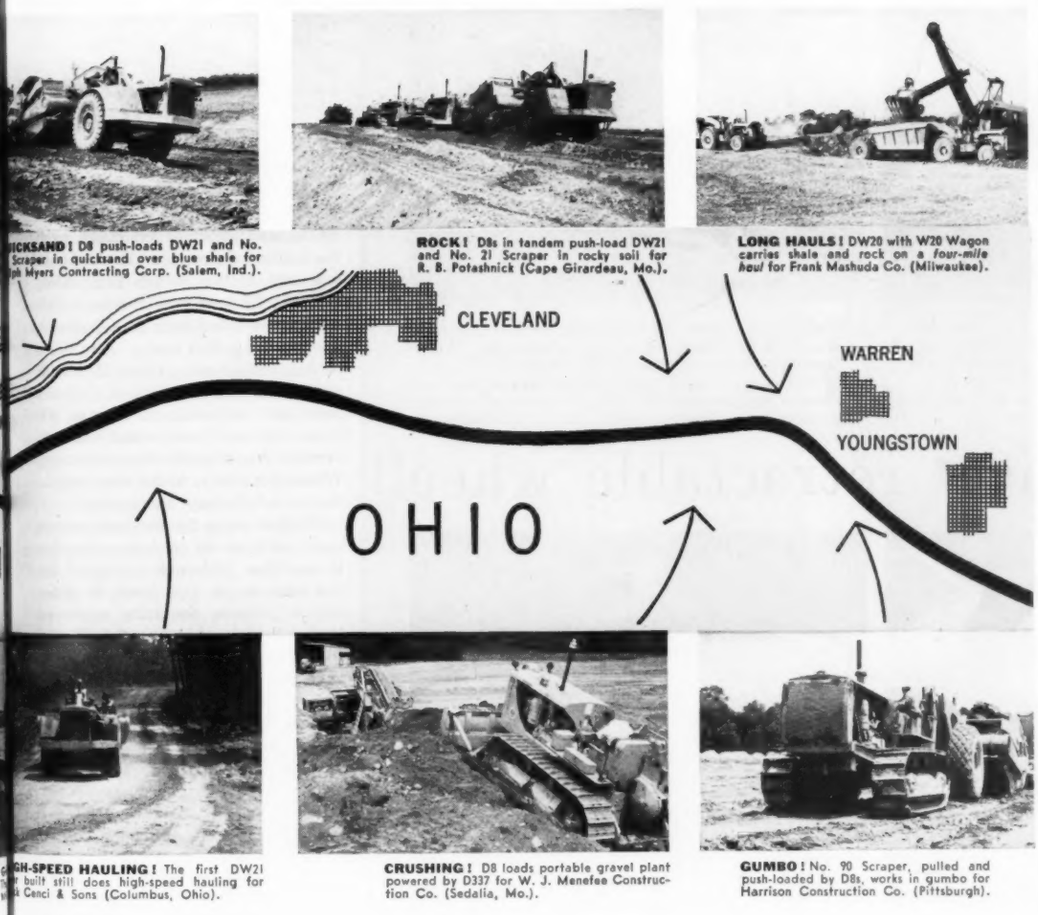
The American Road Builders' Association Convention and Road Show will be held January 28 through February 2, 1957, in the International Amphitheater in Chicago. The show will utilize 300,000 square feet of exhibit space in which the latest models of construction machinery and related equipment will be displayed and demonstrated.

The 1957 show will be the first since 1948, when the association held its outdoor exhibit in Soldier Field, Chicago.

Turner Appointment

Walter B. Shaw has been named contract manager in the New York, N. Y., office of Turner Construction Co. He has been with the company since 1939, except for three years spent on duty with the U. S. Navy.

...on the Ohio Turnpike ...Caterpillar



QUICKSAND! D8 push-loads DW21 and No. 21 Scraper in quicksand over blue shale for Ralph Myers Contracting Corp. (Salem, Ind.).

ROCK! D8s in tandem push-load DW21 and No. 21 Scraper in rocky soil for R. B. Potashnick (Cape Girardeau, Mo.).

LONG HAULS! DW20 with W20 Wagon carries shale and rock on a *four-mile haul* for Frank Mashuda Co. (Milwaukee).

HIGH-SPEED HAULING! The first DW21 ever built still does high-speed hauling for Cenci & Sons (Columbus, Ohio).

CRUSHING! D8 loads portable gravel plant powered by D337 for W. J. Menefee Construction Co. (Sedalia, Mo.).

GUMBO! No. 90 Scraper, pulled and push-loaded by D8s, works in gumbo for Harrison Construction Co. (Pittsburgh).

It is an amazing demonstration of the versatility of yellow equipment. There are 450 Cat track-type tors alone — *346 are D8s!* That represents 85% of e crawlers at work on the project. Eighty-three per of the motor graders at work are Caterpillar, and of the rubber-tired tractor-scraper units.

Heavy-duty, dependable Cat Diesel Engines are ering draglines, clamshells, shovels, backhoes, hers, compressors, loaders. And through long, second shifts, Caterpillar Electric Sets are pro- g the electricity for flood-lighting and contractors' ce shops.

Never before has there been such a testimonial to one make of equipment as this 650-unit fleet. Now's the time to follow the lead of road building leaders.

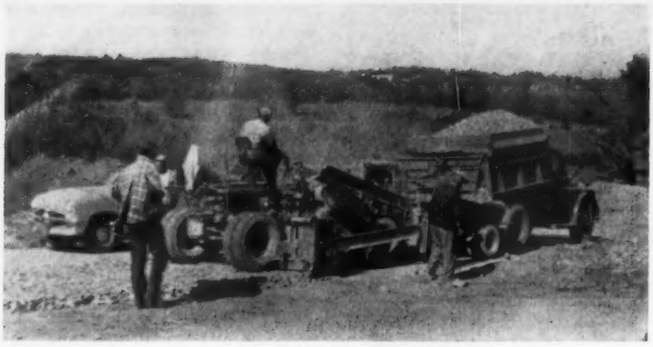
Start standardizing on Caterpillar equipment!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

WORLD'S NO. 1 ROAD BUILDER



Crushed stone for the base course is laid by an Apsco spreader in two lifts. The first course is 8 inches thick, and the second 4 inches thick.

Blacktop Is Laid On Crushed Stone

By R. P. ROBINSON, Engineer, The Texas Co.

USING FLEXIBLE-TYPE construction from top to bottom, Tuckahoe Construction Co., Inc., Tuckahoe, N. Y., paved more than 7 miles of 22-foot roadway on State Route 52 west of Liberty, N. Y., for the New York State Department of Public Works. Over a 12-inch subbase of bank-run gravel, a 12-inch base of broken stone was laid, the top 4 inches being penetrated with asphalt cement. Two courses of hot-mix asphalt completed the job.

The contract price for the 7.29-mile job was $1,562,047. Excavation involved moving 250,000 cubic yards of earth, all but 10,000 yards of which was used in the project. One rock cut of 5,000 cubic yards and a shale cut of 3,000 cubic yards were encountered. About 20,000 cubic yards of material was removed in trenching operations. The total amount of pipe used for underdrainage added up to 24,000 feet.

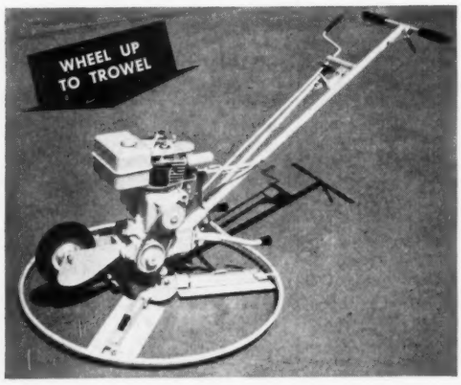
Bank-Run Subbase

Bank-run gravel for the 12-inch subbase was obtained by hauling 45,000 cubic yards of borrow from a pit located about seven miles from the center of the job. The subbase was laid in two 6-inch lifts. After the first lift was laid, it was rolled, voids were filled with fine material, and the lift rolled again. Any holes or depressions were then filled with gravel and the base rerolled. Courses were laid in maximum runs of 500 linear feet and rolled and filled to prevent the subgrade from softening. Where necessary, water was used to insure satisfactory compaction.

Crushed stone for the base course was laid down by an Apsco spreader in two lifts. Although it is usual for the base to be put down in three 4-inch courses, the state approved laying the stone in one 8-inch and one 4-inch course, providing the contractor used a Vibro Tamper to compact the 8-inch course. After being compacted, this course was dry-choked while the 4-inch course was penetrated with New York State

A Vibro Tamper compacts the crushed-stone base course for the 22-foot flexible pavement on Route 52 west of Liberty, N. Y.

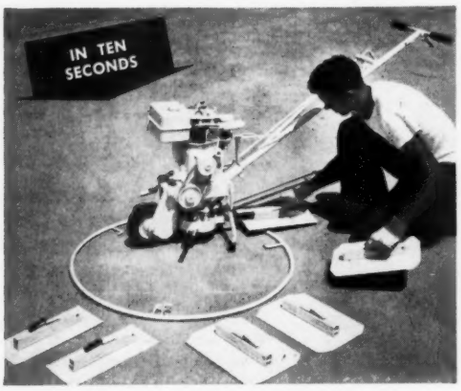
Here's the new **White** troweler



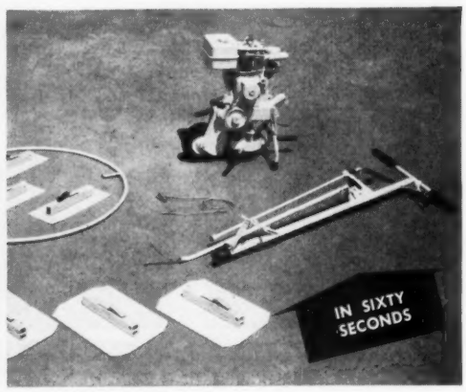
A White troweler can't get away from you, because of safety throttle on handle. Blade rotation stops and *engine idles* if operator accidentally lets go of machine. No need to stop and adjust blade pitch . . . Unique brake lever on handle does this *during rotation.*

Talk about one-man portability! With retractable wheel down, operator easily wheels his White troweler from slab to slab or truck, *by himself.* Wheel is controlled from handle. Because this exclusive feature actually takes the place of a helper in moving, a White troweler pays real dividends.

with exclusive* retractable wheel!



To clean blades, change from float to finish blades, or to wheel machine through narrow doorways, it takes but 10 seconds to remove ring and blades of a White troweler. *A ONE-MAN JOB.*



In one minute, the White troweler can be completely disassembled. Power unit, ring, blades *and handle* dismantle quickly for storage or for carrying in the *closed* trunk of a car. *A ONE-MAN JOB.*

Ten seconds for ring and blade removal

OTHER SPECIFICATIONS

Model T-1 White troweler, 36" ring, complete with float and finish blades. Equipped with Briggs & Stratton 4-cycle engine, retractable wheel, rubber tipped stand. Fully guaranteed.

See it . . . try it . . . compare it!

The new White troweler will do everything present style machines can do — and a lot more. Write for full information and name of the nearest dealer.

*Patent No. 2,621,568
Other patents pending.

White MANUFACTURING COMPANY, ELKHART 2, INDIANA

Over the 2-inch binder course, a 1-inch wearing course is laid by a Barber-Greene finisher and compacted by a Buffalo-Springfield tandem roller.

64-P asphalt of 100 to 200 penetration.

The gradation of the four different stone classifications used for the base was as follows:

Stone		Per Cent Passing
No. 1	1-inch	100
	½-inch	90-100
	¼-inch	0- 15
No. 2	1½-inch	100
	1-inch	90-100
	½-inch	0- 15
No. 3	3-inch	100
	2-inch	90-100
	1-inch	0- 15
No. 4	3-inch	90-100
	2-inch	0- 15

The 40,000 tons of stone required for the base was supplied by the quarry of Sullivan Highway Products Corp., Fosterdale, N. Y. Two insulated transport trucks delivered the 200,000 gallons of asphalt cement for the base course in 115-mile-long hauls from the Bayonne, N. J., terminal of The Texas Co.

Asphalt was placed at a temperature of 275 to 350 degrees F. An Etnyre distributor applied the material to the top 4 inches at the rate of two gallons per square yard under a pressure of 50 psi. Clean No. 2 crushed stone was spread, broomed, and rolled until voids in the course were filled.

Stone for the base course was laid by County Asphalt, Inc., Tarrytown, N. Y., under a subcontract which included construction of the hot-mix asphalt surface. The two surface courses consisted of a 2-inch binder course and a 1-inch wearing course. Approximately 20,000 tons of asphalt mix, with 85 to 100-penetration Texaco asphalt as binder, was supplied by Sullivan Highway Products Corp. from its Liberty plant.

Aggregate was dry-mixed for 15 seconds and brought to a temperature between 225 and 275 degrees F. Asphalt cement was heated to between 250 and 300 degrees F. Both materials were then mixed in the pugmill for 45 seconds.

The wearing surface was put down by a Barber-Greene finisher and compacted by a Buffalo-Springfield roller.

The mix for the binder course and asphalt wearing course was as follows:

Passing	Retained	Percent by weight Binder Course	Top Course
.....	1-inch	0.5	.....
1-inch	½-inch	35-60	.....
½-inch	¼-inch	20-40	20
¼-inch	⅛-inch	5-15	29.5
⅛-inch	No. 20	4-20	24
No. 20	No. 80	.....	13
No. 80	No. 200	.....	3
No. 200	.....	.....	4
Asphalt		4.0-5.5	6.5

Representing the State Department of Public Works on the project was Jerry Bone, resident engineer, working under F. W. Donovan, division engineer. Anthony Verdesco was superintendent for the Tuckahoe Construction Co., Inc. THE END

Line of Pumps, Compressors, And Air Drills and Tools

■ A catalog covering the complete line of Gardner-Denver pumps, compressors, rock drills, and pneumatic equipment has been released. The section on compressors covers single-stage and two-stage water-cooled and air-cooled compressors, and portable air compressors in sizes from 60 to 600 cfm. It also describes vacuum pumps and a number of air compressors for special uses, such as engine starting and automotive and sprinkler service. The centrifugal pumps shown include side-suction and close-coupled units.

Rock drills including wagon drills, the pipeliner's Twindril, stopers, hand-held drills, air-leg drills, drifters, deep-hole drills, quarry drills, hydraulic drill jumbos, and drill mountings are treated in detail.

To obtain this literature write to the Gardner-Denver Co., S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 153.

Report on Turf Research

A progress report on its 1952-53 project for the maintenance of a vegetative cover on roadsides can be obtained from the Landscape Bureau of the State of New York, Department of Public Works, Babylon, N. Y.

The present report, a continuation of the 1951-52 report which surveyed and analyzed significant turf establishment projects in the northeast United States, deals with efforts to determine the most economical way of starting and maintaining turf growth.

Introducing the

"256"

FORD

INDUSTRIAL ENGINE

with

proven design features far ahead of competition

★ GAS-SAVING LOW-FRICTION

★ HIGH (7.2 to 1) COMPRESSION

★ LARGE BORE (3.62) SHORT STROKE (3.1)

★ DEEP RIGID BLOCK

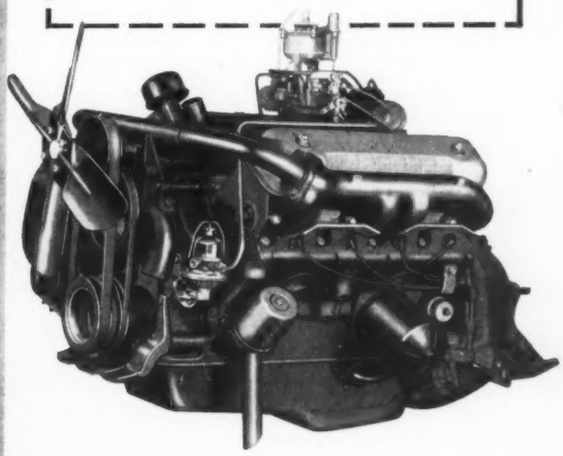
Ford

INDUSTRIAL ENGINES AND POWER UNITS

Available as Closed Power Unit

HEAVY DUTY V-TYPE, 8-CYL. OVERHEAD-VALVE

256 CU. IN. DISPLACEMENT



This modern Ford "256" Heavy Duty Industrial Engine of the Overhead-Valve Type is designed to minimize the wasted horsepower that outmoded, long stroke engines lose because of excessive internal friction. The combination of high compression with large cylinder bore and short piston stroke serves to deliver *more* usable power on less gas. Also, short piston travel reduces wear and engine lasts longer!

There are many modern design features worth looking into that contribute to more dependable, low cost operation. This engine is manufactured by modern methods utilizing Ford's revolutionary *automation* equipment which provides the user with a rugged, high-precision power plant. For all these reasons, the Ford "256" will out-perform any industrial gasoline engine of comparable displacement.

And remember, Ford offers a complete range of engines with the most advanced design at low first cost. Most important, too, is the fact that parts and service are available through Ford Dealers everywhere.

Phone or write today for a detailed 8-page folder giving complete specifications, power curves, detailed dimensional drawings, available accessories, etc., for this new Ford "256" Engine.

INDUSTRIAL ENGINE DEPARTMENT

FORD MOTOR COMPANY

15050 Woodward Avenue, Highland Park 3, Michigan

Steel, Concrete Roof Passes Fire Test

A steel roof deck insulated with lightweight perlite concrete recently demonstrated excellent fire-resistant properties when it successfully withstood 45 minutes of continuous fire exposure at temperatures up to 1,700 F. The test simulated actual conditions at an industrial-plant fire.

Sponsored jointly by Granco Steel Products Co., Granite City, Ill., and the Perlite Institute, New York, N. Y., the test was conducted on 24-gage, corrugated, galvanized Tufcor steel sheets manufactured by Granco. The sheets were covered with 2½ inches of perlite concrete aggregate, a lightweight concrete with high insulating qualities, and a four-ply built-up roof was on top of the concrete deck.

At the end of the 45-minute fire test, the Tufcor-perlite roof remains intact. The figure on the roof is a dummy dressed in fireman's uniform, and the test demonstrated that a fireman actually would have been safe on the roof top. A stream of water is being played on the inside of the roof deck to demonstrate its ability to withstand sudden cooling.

Despite the intense heat, the roof deck remained in place, with only moderate deflection at midspans. There was no burning of the roof material and no evidence of any dripping or falling of the roofing material or the roof deck. Twenty-four gas burners under the test roof raised the temperature to more than 1,700 F, but the temperature on the roof top stayed at about 200 F.

Engineers who witnessed the test cited three reasons why the resistance proved so high: (1) no combustible vapor seal was used between the roof deck and insulation; (2) the monlithic, cast-in-place, perlite concrete slab eliminates multiple joints, thus preventing dripping of molten tar from the roof surface; (3) the combination of welded-in-place tough-temper steel sheets topped with mesh-reinforced lightweight concrete adds exceptional strength and rigidity to the roof construction.

Wheels oscillate to knead the road—TIMKEN® bearings take the load

THE Tampo SP9 self-propelled pneumatic tired roller kneads the road with an oscillating action of the wheels. This puts a heavy thrust load on the wheel bearings. The nine wheels also have to be able to carry heavy radial loads.

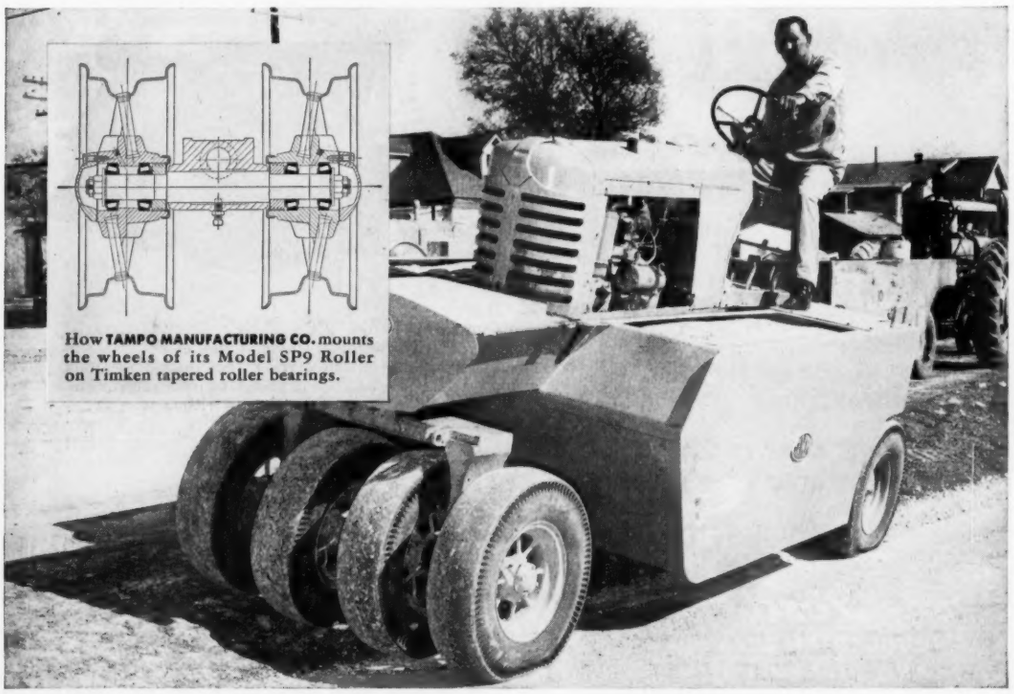
Because the bearings are Timken® tapered roller bearings, both kinds of loads are carried with ease. The tapered design of Timken bearings lets them take radial and thrust loads in any combination. And line contact between the rollers and races of Timken bearings gives them extra load-carrying capacity.

To get steel good enough for these bearings, we make our own—Timken fine alloy steel. To provide wear-resistant surfaces over shock-resistant cores, the bearings are case-carburized. They're hard on the outside, tough on the inside.

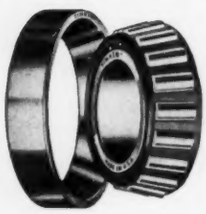
There's less power loss in the wheels because the true rolling motion and smooth surface finish of Timken bearings practically eliminate friction. And because they keep housings and axles concentric, Timken bearings make closures more effective. Lubricant stays in; dust, dirt and moisture stay out. Maintenance time is reduced, longer bearing life assured.

Be sure to specify Timken bearings for all the construction equipment you build or buy. Look for the trademark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



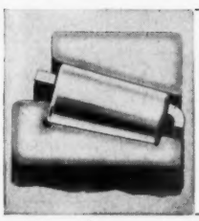
How **TAMPO MANUFACTURING CO.** mounts the wheels of its Model SP9 Roller on Timken tapered roller bearings.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis Timken steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ↓ AND THRUST → LOADS OR ANY COMBINATION ↓→

Mobile Loader Is Improved

■ A new self-cleaning moldboard for its Athey 125 HiLoader prevents material buildup and protects the machine from cave-ins, according to the Athey Products Corp., 5631 W. 65th St., Chicago, Ill. Basically for use with machines working in pit and quarry operations, the heavy-duty moldboard has sheer angles on all surfaces to prevent material carry-over.

The HiLoader can now load out of one stockpile of rock or gravel, back out of the pile and unload its belt, and immediately dig into a stockpile of mortar sand without having the moldboard cleaned. Width of gather has been extended to 10 feet to provide greater loading capacity, even in low stockpiles. The extra 2-foot width and the increased length of the augers bring more material into the full-floating paddle-blade feeder, keeping production constantly high.

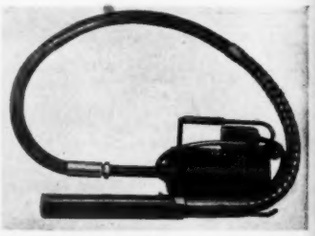
For further information write to the company, or use the Request Card at page 18. Circle No. 10.

Electrically Powered Concrete Vibrator

■ A new electrically powered concrete vibrator is announced by Roeth Vibrator, Inc., 9229 Chestnut St., Franklin Park, Ill. The lightweight vibrator has a motor that weighs 32 pounds and develops 2 hp under full load. It develops as much as 8,000 vibrations per minute.

The complete unit consists of a Roeth vibrator head, a 10-foot flexible shaft, and a universal-type motor.

For further information write to the company, or use the Request Card at page 18. Circle No. 18.



The new Roeth electrically powered vibrator.

FIRST CLASS
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CONVENTION CALENDAR

August 30 - September 3 National Shade Tree Conference
Thirtieth Annual Meeting, National Shade Tree Conference, Hotel Haddon Hall, Atlantic City, N. J. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

September 13-15 American Road Builders' Association
Second Annual National Conference of County Engineers and Officials, sponsored by the County and Local Roads Division of the American Road Builders' Association, Deshler-Hilton Hotel, Columbus, Ohio. Ben F. Ostergren, managing director, County and Local Roads Division, ARBA, World Center Bldg., Washington 6, D. C.

September 16-18 Western Assn. of State Highway Officials
Meeting, Western Association of State Highway Officials, Sun Valley Lodge, Sun Valley, Idaho. Earle V. Miller, state highway engineer, Boise, Idaho.

September 19-22 American Public Works Association
American Public Works Association, 1954 Public Works Congress and Equipment Show, Municipal Auditorium, Atlantic City, N. J. D. F. Herrick, executive director, APWA, 1313 E. 60th St., Chicago 37, Ill.

September 28-30 Southeastern Assn. of State Highway Officials
Annual Meeting, Southeastern Association of State Highway Officials, Andrew Jackson Hotel, Nashville, Tenn. Berrien W. Davis, secretary-treasurer, SASHO, State Highway and Public Works Commission, Raleigh, N. C.

October 5-8 Ohio Short Course on Roadside Development
Ohio Short Course on Roadside Development, Deshler-Hilton Hotel, Columbus, Ohio. Wilbur J. Garmhausen, chief landscape architect, State Highway Department, Columbus 15, Ohio.

October 6-8 Virginia Highway Conference
Virginia Highway Conference, Virginia Military Institute, Lexington, Va. R. P. Ellison, executive assistant, Department of Highways, Richmond, Va.

October 14-15 Diesel Operators' Conference
Diesel Operators' Conference, The Student Union, University of Nebraska, Lincoln, Nebr. Robert A. Ratner, supervisor of institutes, 101 Architectural Hall, University of Nebraska, Lincoln, Nebr.

October 18-22 American Society of Civil Engineers
Annual Convention, American Society of Civil Engineers, Hotel Statler, New York, N. Y. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York, N. Y.

October 18-22 National Safety Congress
Forty-second Annual National Safety Congress and Exposition; Hilton, Congress, Palmer House, Morrison, and LaSalle hotels. G. E. Burus, congress manager, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

October 25-27 National Lubricating Grease Institute
Meeting, National Lubricating Grease Institute, Mark Hopkins Hotel, San Francisco, Calif. Harry F. Bennetts, executive secretary, 4638 J. C. Nichols Parkway, Kansas City, Mo.

October 25-28 American Institute of Steel Construction
Meeting, American Institute of Steel Construction, The Greenbrier Hotel, White Sulphur Springs, W. Va. L. Abbett Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

October 28-29 American Concrete Institute
Seventh Regional Meeting, American Concrete Institute, Statler Hotel, Los Angeles, Calif. William A. Maples, secretary-treasurer, 18263 W. McNichols Road, Detroit 19, Mich.

Safety Note—The careless employee whose job calls for ladder or scaffolding work all too often throws an unintentional "bean ball". The Accident Prevention department of Employers Mutuals of Wausau warns workers that nothing should be thrown from a height until the pitcher is 100 per cent sure there is no one beneath him.

Contractor Keeps Busy With Conservation Jobs

One of the contractors taking advantage of the need for heavy earth-moving power in the field of conservation is Clark McFarland of Circleville, Ohio, who completes more than 350 conservation projects annually in the state.

Last year, McFarland and his brother, Marshall, built more than 25 farm ponds for Ohio farmers. At the moment, a number of similar projects are awaiting construction. Ditch drainage work, gully and erosion control, land leveling, land clearing, and watershed construction jobs are included in his schedule.

McFarland, starting in the construction business in 1948, is doing these rural jobs with an equipment fleet which includes an Allis-Chalmers HD-15 hydraulic torque-converter-drive tractor, an HD-9, an HD-5G with front-end shovel, three trailer trucks, and four dump trucks.

Land is cleared by an Allis-Chalmers HD-15 tractor on one of McFarland's rural jobs.

Working to meet the needs created by a steadily dropping water table, erosion, silt in streams, and wind-blown topsoil, McFarland and his brother have become a well known conservation team in Ohio.

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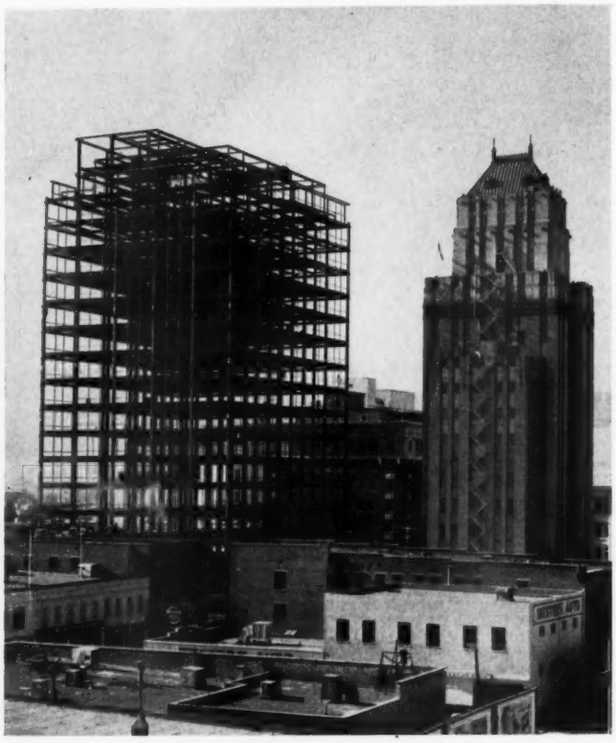
Framework Is Welded for New Office Building

Bolted connections, when needed, secure members until joining plates are welded into position

By RAY DAY



Rising 18 stories above the streets of El Paso, Texas, is the El Paso Natural Gas Co.'s new office building. Structural steel members, instead of being riveted, were welded together. John F. Beasley Construction Co., Muskogee, Okla., handled the erection job.

THE NEW HOME of the El Paso Natural Gas Co., an 18-story building in downtown El Paso, Texas, is rapidly rising on a site only two blocks from the firm's original one-room office in the First National Bank Building. Robert E. McKee, Inc., El Paso, is general contractor for the project, which will cost $4,500,000, including the price of the land. Started early last summer, the job is slated for completion in September.

Designed by Carroll & Daeuble, the structure will be operated by the El Paso Natural Gas Building Co., a wholly owned subsidiary of the gas company. It will be the tallest building in the city. Long vertical aluminum fins will extend from the second floor to an inset on the seventeenth floor. The fins will project 2 feet from the face of the building and deflect the sun from many of the windows. A concrete canopy will extend 6 feet over the sidewalk above the main entrance. The four corners of the building have been constructed of buff-colored brick, while the exterior walls of the main floor are of dark green granite.

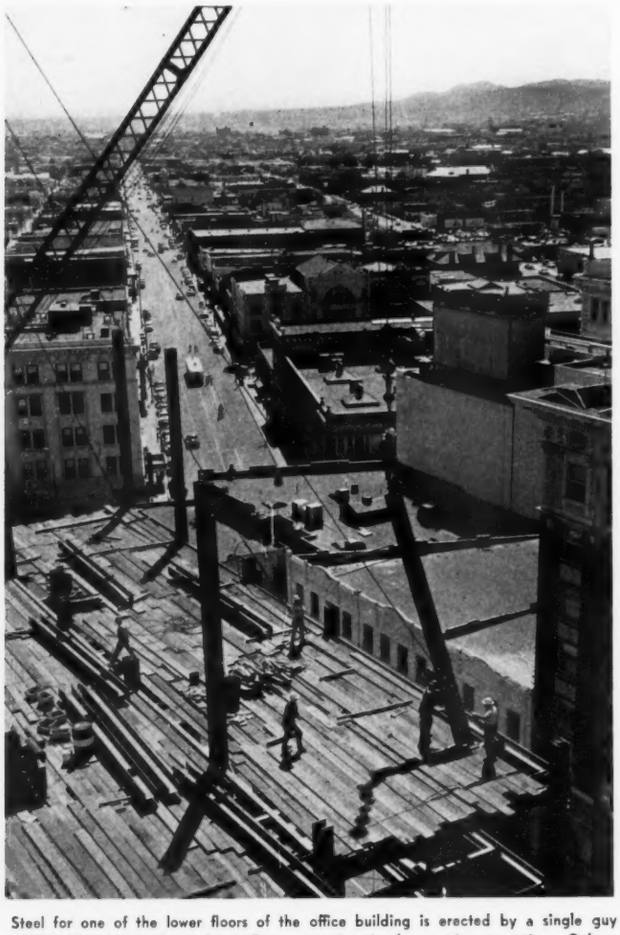
Five large glass-and-aluminum doors provide the entrance to the building, opening into a 9-foot foyer. Five inside doors lead from the foyer to the 22 x 60-foot lobby. Near the main doors, a 4 x 5-foot company emblem is embedded in the terrazzo floor.

Four Otis Autotronic high-speed elevators will handle the transportation load. One will open on two sides, to accommodate freight as well as passengers. A 9-foot vestibule will lead from the freight side of the elevator to a loading dock which will open on an alley. The combination lift will run from the basement to the seventeenth floor; the others will operate from the main floor to the sixteenth.

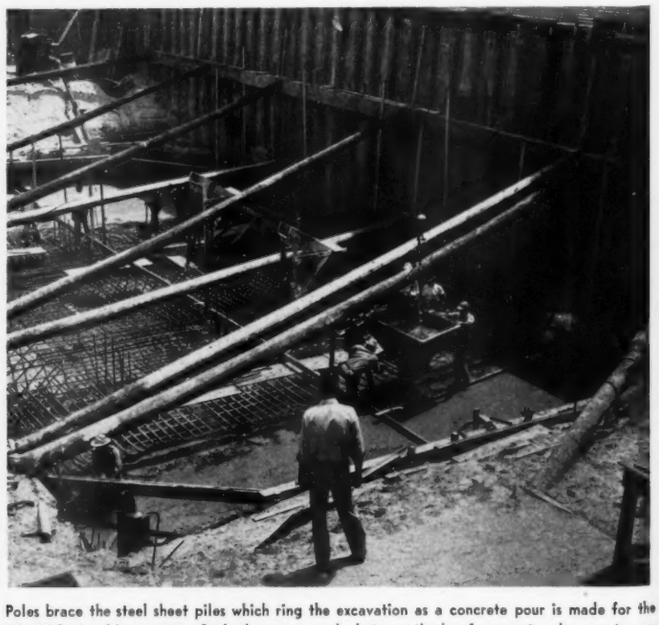
There is a full basement. Some of the heavy footings and floor slabs involve concrete pours of 600 cubic yards. The air-conditioning equipment for the basement and the main floor will be installed in the basement, while the remainder of the building will be cooled with machinery from the seventeenth floor. Beneath the full basement is a sub-basement measuring 40 x 80 feet.

The fifth floor will contain a coffee shop and the personnel department. Offices and conference rooms for the utility company's executives will take up the sixteenth floor. The equipment on the seventeenth floor consists of two York 300-ton centrifugal refrigerator machines, a pair of 150-hp heating boilers, and the necessary fans and pumps. The elevator machinery and cooling towers for the ventilating system will take up the eighteenth floor. All the other floors will be basically the same.

The division of offices is to be determined by the needs of the various departments. As these needs change, the office space will be reapportioned accordingly by means of movable wall panels. Manufactured



Steel for one of the lower floors of the office building is erected by a single guy derrick. The rig was jumped two floors at a time in the erection operations. Only a portion of the derrick boom is visible.



Poles brace the steel sheet piles which ring the excavation as a concrete pour is made for the 40 x 80-foot subbasement. Both the crane and chute methods of concrete placement were used in the foundation of the building.

Buff-colored brick is set in place on the face of the building by men working from wide scaffolds. Vertical fins, projecting 2 feet from the face of the building, will deflect the sun from windows.

by The Mills Co., Cleveland, Ohio, these panels are of all-welded steel construction. They come in 2, 3, and 4-foot widths and are 3 inches thick. Packed with Fiberglas, they are more soundproof than tile and plaster walls twice as thick.

The partitions fit into channels easily installed in the floors, ceilings, and outside walls. They can be used full-length or combined with corrugated half-walls . Baseboards will cover all wiring where the panels meet the floor.

The floors will be finished with 3/16-inch rubber tile, except for the terrazzo on the entire main floor. It will require 19 carloads of tile to cover all the floor space in the building.

Sealux Browne flue-type windows, which can be washed on both sides from within the building, have been specified in the plans. Framed in aluminum, they are 4 feet wide and 5 feet high. They open out from a center post, much like the covers of a book. Fluorescent fixtures will supplement the natural light. They, like the walls, will be movable, to meet the needs of changing conditions. Floor to floor space is 12 feet, though the actual room height is 9 feet. The additional 3 feet between the acoustical tile ceiling and the floor above will hide wiring, plumbing, and air-conditioning equipment.

McKee Excavates

The excavation for the building was a sizable job involving a section of earth 35 feet deep and a quarter of a city block in area. Steel sheet piles were driven to a depth of about 15 feet on all sides of the excavation to protect adjoining property. All this work was done by McKee with his own equipment.

Piles were driven by a Northwest crane with a single-acting hammer in a set of 50-foot leads. A pair of Northwest draglines and a fleet of 5-cubic-yard dump trucks handled the mucking operations. Dirt was hauled to disposal sites which needed the material. A rented wellpoint system, designed and installed by the John W. Stang Corp., Bell, Calif., took care of the ground water problem in the deep foundations.

The base of the structural steel frame has column members 14 inches square with 1½-inch webs in the H-beams. The framework was supplied by the Mosher Steel Co. and erected by the John F. Beasley Construction Co., Muskogee, Okla. An all-welded job, the framework was erected entirely without rivets.

An arrangement was made with an El Paso testing service to give certification tests to all welders and to make frequent spot checks of the work. In this way, the best possible welding job was assured.

Beasley employed a single guy derrick from the approximate center of the building site. Steel was erected by jumping the rig two floors at a time each time a frame was placed. The members were sometimes secured temporarily with bolted connections until the joining plates could be installed and welded into position. A combination asbestos and plaster method is being used to fireproof the steel.

The heavy concrete footings and floor slabs rest on firm soil deep in the ground. Forming for these pours was a conventional carpenter's assignment. Where possible, the natural sides of graded earth were used. A combination of shiplap lumber, studs, and wales completed the forming.

Concrete came from McKee's plant in El Paso. It was mixed and transported to the pours by Blaw-Knox truck mixers. Placing was either directly from chutes or by means of the Northwest rigs. Mall vibrators consolidated the material.

Many hundreds of cubic yards of special lightweight concrete made with expanded shale aggregates, El Toro cement, and water is being used

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Caterpillar Motor Graders not only do a variety of profitable jobs, but often do two of them at once. An example is the No. 12 pictured. It's at work on a job near Washington, D. C., for Williams Construction Co. of Baltimore.

"Our Caterpillar Motor Graders," explains Eugene H. Owens, superintendent, "maintain good haul roads for our rubber-tired CAT* earthmovers and grade and slope bank at the same time. Finished grade is completed as we make the fills and cuts. That way money is saved as well as time."

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in the upper floors. Hoisted to pour level in a 265-foot tubular steel tower by a Waukesha-driven American three-drum hoist, it is being placed directly on Robertson Q-decking. Finishing to rough tolerance is by screed men and cement finishers.

The installation of wiring, air-conditioning ducts, plumbing, and other service facilities is being subcontracted to specialty firms under the supervision of E. M. Hansen, general superintendent for McKee. THE END

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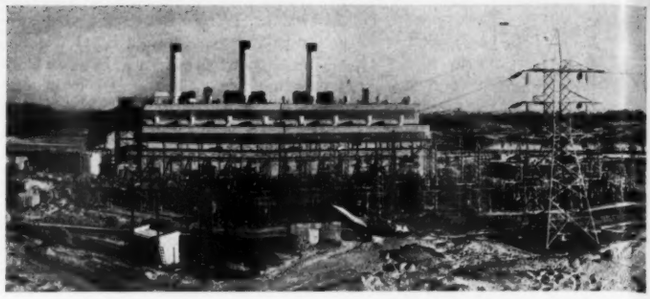

The recently completed Bokaro thermal power station in India's Damodar Valley, designed and built by the Kuljian Corp., Philadelphia, Pa., at a cost of $35,000,000, is a major factor in a huge irrigation, power, and flood-control program in the area.

Kuljian Winds Up 3-Year Power Plant Job in India

Operation of the new $35,000,000 Bokaro thermal power station in the Damodar Valley in India has been turned over completely to Indian engineers. This development terminates a three-year contract for construction, initial operation, and engineer training held by the Kuljian Corp., Philadelphia, Pa.

The Bokaro project involved construction of three facilities: the steam power station; Konar Dam, situated 12 miles from the plant; and a total of 477 miles of transmission lines and substations. The main plant comprises six 300,000-pounds-per-hour boilers which feed three 60,000 - kilowatt turbo - generating units. The plant has been built large enough to house an additional 60,000-kw unit when needed. An aerial conveyor supplies coal at the rate of 700,000 tons annually from the nearby Bermo strip coal fields.

The project is expected to play a vital part in the gigantic irrigation, power, and flood-control program covering the 330-mile-long Damodar Valley in eastern India. The Kuljian Corp. was awarded contracts involving the engineering, procurement of materials and equipment, construction, initial operation, and training of native engineers to operate the plant. Hrand H. Levonian, vice president in charge of construction for Kuljian, supervised construction of the project.

International Road Group Enlarges Training Program

An International Road Educational Foundation, designed to enlarge its fellowship and training program for foreign engineers, has been set up by the International Road Federation, Washington, D. C.

The foundation will provide for one phase of the organization's five-point fellowship and training program — the advanced education awards, which allow foreign engineers nine months of study and eight weeks of observation of highway departments and industry related to highway construction and transportation.

The training program, aside from the academic phase, allows foreign engineers a chance to get on-the-job paid training as employees of U. S. state highway departments and to study selected highway departments, construction projects, and municipal traffic. National training schools in foreign countries, to encourage mechanization of highway departments, as well as lectures abroad by highway authorities, round out the program. Frank T. Magennis, chairman of the board of directors of the federation, has been named president of the newly organized educational foundation.

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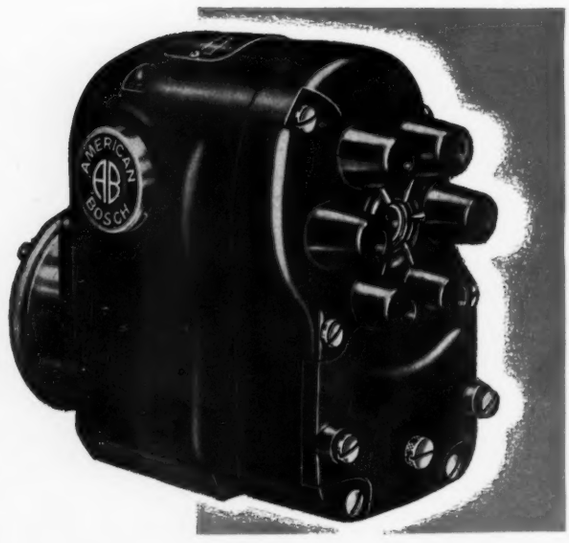

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The new 200,000-pound-capacity Soiltest concrete-testing machine.

Concrete-Testing Machine

■ A 200,000-pound-capacity portable concrete-testing machine is announced by Soiltest, Inc., 4520 W. North Ave., Chicago 39, Ill. The machine can be used in field and laboratory testing of concrete cylinders, beams, and other construction materials. The tester is entirely self-contained, and no electrical or pressure connectors are required.

Loads are developed by means of a hand-operated two-speed concentric pump which actuates the piston of the main hydraulic system. The manufacturer reports that the unit meets ASTM and AASHO specifications for design and accuracy of hydraulic concrete-testing machines.

Standard 6-inch-diameter concrete cylinders 12 inches high are accommodated in the normal machine setup. Variations in specimen height are easily compensated for by adjusting the upper platen to position. The concrete tester is equipped with a large direct-reading gage and a maximum load pointer.

The testing machine can be converted to a 20,000-pound-capacity flexure-testing machine for beam tests. The flexure attachment includes the transverse beam-loading apparatus and a reading gage. Beams up to 42 inches in length can be tested, and either center or third point loading can be used.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 25.

New Booklet Describes Types of Portland Cement

■ A brochure explaining the characteristics of the five basic types of portland cement, as well as a number of specialty cements, has been issued by Calaveras Cement Co., 315 Montgomery St., San Francisco 4, Calif.

The publication contains a consolidated summary of federal government and ASTM specifications for all types of portland cement from I through V.

Calaveras cements under these classifications include a white portland cement, a plastic cement, a pipe cement, and low-alkali cements.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 89.

Data on Shovel-Cranes' Hydraulic Power Controls

■ The hydraulic shovel-crane control system used in its equipment is described in a booklet from the Link-Belt Speeder Corp., 1201 Sixth St. S. W., Cedar Rapids, Iowa.

Comparing the efficiency and reliability of the company's Speed-o-Matic power hydraulic control system to that of automobile, machine-tool, and other control systems, the manufacturer claims a production increase due to faster cycles, reduced operator fatigue, greater accuracy, and lessened downtime. Another benefit is the elimination of up to 150 working parts in drum clutches and swing clutches alone, providing reduced maintenance and clutch adjustment.

With the recent introduction of the Model LS-98, a 1-yard machine, Link-Belt Speeder now offers a complete line of ½ to 3-yard crawler, truck, and wheel-mounted shovel-cranes equipped with the Speed-o-Matic controls.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 101.

Building Corp. Promotes

The Wonder Building Corp. of America, Chicago, Ill., specialists in steel buildings, has appointed Edward L. Logrbrinck vice president in charge of sales. He takes the place of Peter S. Pedersen, Jr., now senior vice president.

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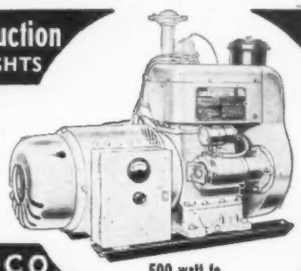

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One of the two 58-foot-high and 45-foot-wide gates for the Sir Adam Beck Niagara generating station No. 2 in Canada is set in place at the tunnel entrance. The tunnel will conduct water to the Queenston power plant.

Dominion Bridge Co., Ltd., Photos

Largest Hydraulic Gates Guard Hydroelectric Plant

TWO HYDRAULIC control gates and hoists—the largest of their kind in the world—have been placed at the entrance of two tunnels which carry water under the city of Niagara Falls, Ontario, to the head pond of the hydroelectric power plant at Queenston. Designed, fabricated, and erected by Dominion Bridge Co., Ltd., Lachine, Quebec, they are part of the Sir Adam Beck generating station No. 2 built by the Hydro-Electric Power Commission of Ontario.

Since control gates of this size had not been built in Canada before, model studies based on the proposed design were carried out by the commission to determine lifting loads arising from water conditions when the gates were opened or closed. At the same time, the hydraulic effect on the tunnel was studied, and a lowering speed of 4½ inches per minute set for the gates.

Screw-Type Hoist

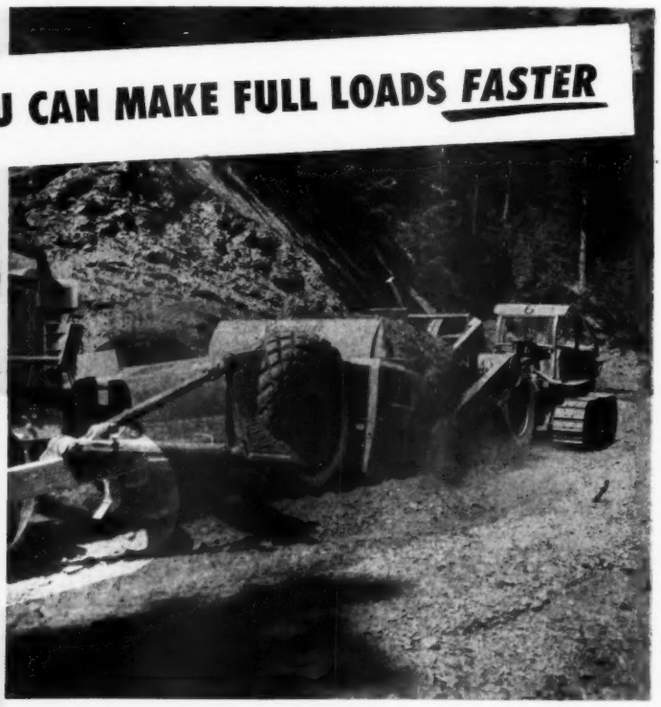
These gates will cut off water to the tunnels at full flow in case of an emergency, and they may not be used for several years. For this reason, a screw-type hoist is used. Corrosion of the rope-type hoist, it was felt, might not be discovered until the gates were ready to be pressed into use. The pair of 10-inch-diameter rotating steel screws, 71 feet long, were built by the Camden Forge Co., Camden, N J., which also made the matching bronze lifting nuts. These nuts, supported in forged steel trunnions carried in the lifting lugs on each side of the gate, transmit the load to the screws.

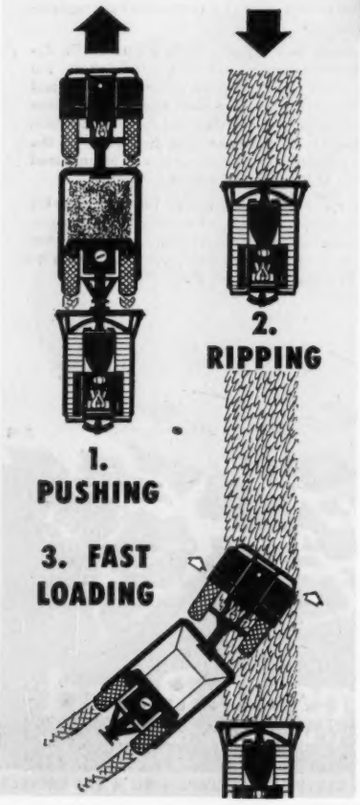
Operating against a head of 56 feet, each gate is 58 feet high, 45 feet wide, and has a weight of 225 tons. The hydraulic load is carried into the embedded steel by 42-inch-diameter fixed angle rollers with crowned faces and grease-lubricated bronze bushings. Though basically

HERE'S HOW YOU CAN MAKE FULL LOADS *FASTER*

IN SCRAPER LOADING WITH

PRECO *Back-Rippers*





PRECO BACK-RIPPERS—hinged teeth welded to the reverse side of the bulldozer—rip the ground while the pusher tractor is backing up between loads.

This operation (during deadhead time) thoroughly prepares the ground, ripping and cross-ripping it, for quick forcing of the dirt into the scraper bowl when the scraper moves forward.

Scraper loading is speeded up tremendously—time is cut—money saved.

Get the full story on these inexpensive, effective Rippers which are available for straight and angling blade bulldozers.

SEE YOUR "CATERPILLAR" DEALER

Preco Back-Rippers are available for "Caterpillar" models including straight blade, angling blade and U-blade bulldozers.

PRECO INCORPORATED
6300 E. SLAUSON AVE., LOS ANGELES 22
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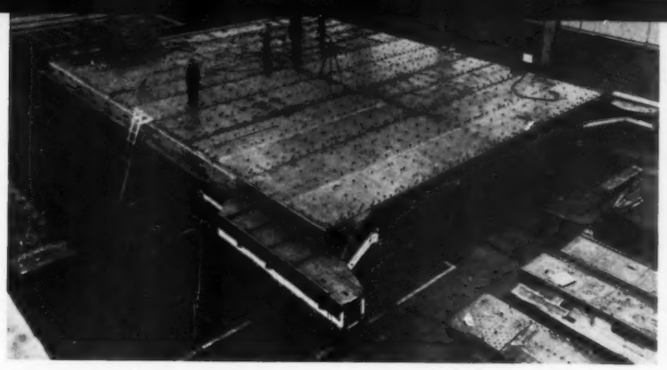
Riveted barrier, to operate against a head of 58 feet, will be lifted into a 75-foot arch by a screw-type hoist



A twin gate—mostly of riveted construction—is assembled by Dominion Bridge Co., Ltd., Canada. The gates were designed for emergency use only.

of riveted construction, the gate has certain portions—such as the top lifting lugs—fabricated by welding. Field joints are riveted and calked, where necessary, to avoid any risk of distortion which would upset the alignment of parts.

Structural Steel Arch

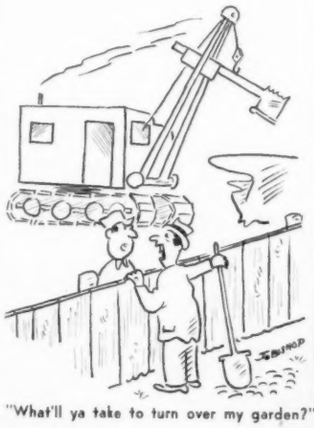
The machinery which rotates the screws is located in a structural steel arch, into which the gate rises when it is lifted. A 40-hp electric motor drives cross shafts leading to each end gear through a central gear case. The end gear cases, containing spur and bevel gears which rotate the screws, also house heavy roller thrust bearings which take the lock from the screws. All shafts are supported on ball or roller bearings.

This 75-foot-high steel arch is sheathed in aluminum so that it is rustproof, has less weight, and presents a pleasing appearance in this public park area. Two sets of steel stop logs, of welded steel construction with rubber seals, were also furnished for the tunnel. Embedded steel checks for the logs were installed upstream from the control gate and at the downstream exits of the tunnels so that the tunnel can be completely unwatered for inspection and repairs. THE END

Bulletin on Engine Line

■ A new engineering bulletin describing its latest diesel, gas diesel, and spark-ignited gas engines has just been released by The Cooper-Bessemer Corp., Mount Vernon, Ohio. The bulletin provides specifications on the complete line of 13-inch-bore and 16-inch-stroke Type JS engines. Cutaway drawings showing engine detail, and performance charts of the atmospheric and supercharged engines are included.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 46.



"What'll ya take to turn over my garden?"

Vollmer Is Named Partner In Brown & Blauvelt Firm

Now associated with Brown & Blauvelt, consulting engineers of New York, N. Y., as a general partner is Arnold H. Vollmer. With the organization since 1951 as manager of technical operations, Mr. Vollmer was formerly chief of the architectural department of Andrews, Clark & Buckley, consulting engineers, and field engineer and designer with Madigan-Hyland.

He also becomes a general partner of Brown, Blauvelt & Leonard, an affiliated firm in the chemical and industrial engineering field.

With 8' dozer blade, Tournapull strips topsoil prior to digging for foundations of motel. "D" regularly self-loaded 5 pay yds. of clay and sand in 80 ft. Later, unit finish-graded entire area.

15 MONTHS: 100 jobs with 1 scraper

Tournapull often spreads load in less than 10 seconds. Short-turning radius (12'8"), 30° oscillating pivot allow safe travel at high speed over rough terrain.

Tournapull speeds through traffic on main road to reach Fenstermacker's scattered jobs. Unit frequently handles slough drainage and land improvement work for farmers in the Rolling Plains and Two Creeks Soil Conservation District. On 100 jobs of this kind, the "D" has moved a total of 90,000 yards.

Fenstermacker Brothers, Stanley, North Dakota, completed over 100 jobs in 15 consecutive months with their rubber-tired D Tournapull. Driving job-to-job under its own power, the "D" built roads, graded building sites, dug farm drainage ditches and leveled land. During winter, the 122 hp unit cleared snow from county and city roads.

"Tournapull does good work any place we put it," says Ray Fenstermacker. "It does more jobs per day than any similar piece of equipment due to its fast travel job to job." A typical move — Stanley to Togus, North Dakota — took under 2 hours for the 50 miles.

Self-loads, moves 125 yds. hourly

Photos show the "D" digging an L-shaped foundation for motel site at Ross. First, it stripped topsoil with its dozer blade. After topsoil was stockpiled, Tournapull excavated 530 cubic yards of wet sand and clay for the building. Self-loading, it averaged 5 pay yds. in 45 seconds. Dirt was spread in a 10-ft. depression in front of the site. Average 550' cycles took 2 minutes. Output averaged 125 pay yds. per 50-minute hour.

For an idea of how D Tournapull could pay off for *you*, ask for an on-your-job demonstration. Call us any time.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-579-A-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

NAMES IN THE NEWS

Burton Marye, Jr., the new chief engineer for the Virginia Department of Highways.

Virginia Highway Office Names Chief Engineer

The assistant chief engineer for the Virginia Department of Highways, Burton Marye, Jr., has been made chief engineer, succeeding Claree S. Mullen, retired. Mr. Marye also succeeds Mr. Mullen as deputy commissioner. The post vacated by Mr. Marye has been taken by Howard H. Harris, former maintenance engineer, and Mr. Harris' post has gone to Stanley V. Munsey, former district engineer at Lynchburg.

A graduate of Virginia Polytechnic Institute, Mr. Marye has been with the highway department almost continuously since 1920. He was named assistant chief engineer in 1948.

Another personnel change in the department took place with the retirement of Archibald H. Bell, location and design engineer. His duties have been assumed by his chief assistant, David Nicholas Huddle.

Longtime Civil Engineer, George E. Martin, Dies

George Earl Martin, 67, well known consulting engineer in highway construction and former instructor in civil engineering, died July 5 at New Rochelle, N. Y.

For 27 years, before his retirement last year, Mr. Martin had been associated with the Barrett Division of the Allied Chemical & Dye Corp., New York, N. Y., as an engineer in the paving material department. At the time of his death, he was a consultant in the editorial department of *Public Works Magazine*.

Mr. Martin took his degree in civil engineering at Purdue University, where he later held the position of professor of highway engineering. He also had taught civil engineering at Colorado College and the University of Illinois. Early in his career, he worked as an assistant in the engineering corps of the Pennsylvania Railroad.

He was a member of the American Society of Civil Engineers. During World War I, he served in France as a captain in the U. S. Army Corps of Engineers.

He has been with the Corps of Engineers since 1929, when he was employed for work on the Nicaragua Canal survey. Later he served with the Board of Engineers for Rivers and Harbors, the Mississippi River Commission, and the Air Forces Section, Military Construction Division.

Page Is Division Chief On Planning, Development

Carter Page has been made chief of the Planning and Development Division, Civil Works, in the office, Chief of Engineers, U. S. Army, replacing George L. Beard, who has resigned. Mr. Page, assistant chief of the division since 1948, has assisted in water resources development studies for federal commissions, including the President's Water Resources Policy Commission of 1950.

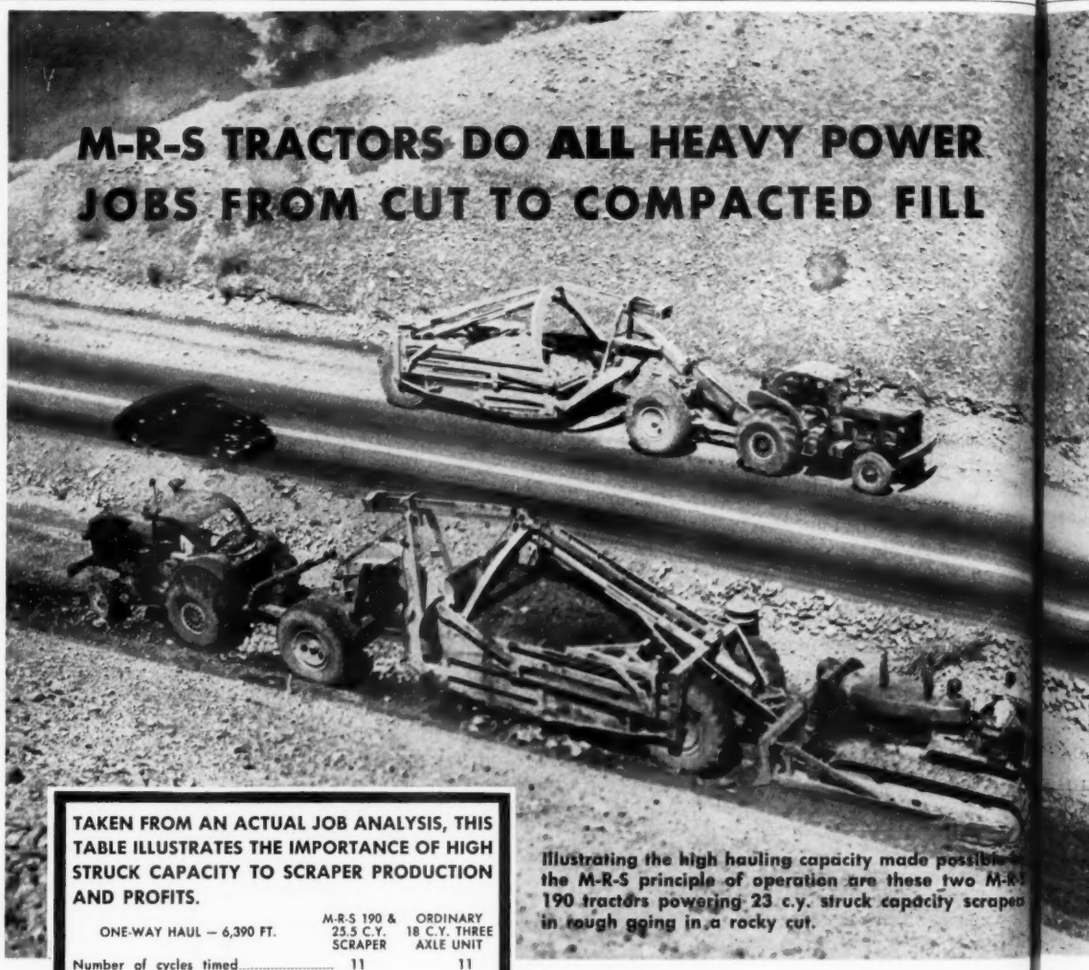
Walter Kidde Firm Names E. G. Robbins Manager

E. G. Robbins has been appointed general manager of construction for Walter Kidde Constructors, Inc., engineering and building firm of New York, N. Y., and Houston, Texas. He succeeds the late C. W. Knowles, who was senior vice president in charge of construction.

A member of the Kidde organization for 27 years, Mr. Robbins has been assistant to Mr. Knowles for the last eight years.

E. G. Robbins, recently appointed general manager of construction for Walter Kidde Construction, Inc.

M-R-S TRACTORS DO ALL HEAVY POWER JOBS FROM CUT TO COMPACTED FILL



Illustrating the high hauling capacity made possible by the M-R-S principle of operation are these two M-R-S 190 tractors powering 23 c.y. struck capacity scrapers in tough going in a rocky cut.

TAKEN FROM AN ACTUAL JOB ANALYSIS, THIS TABLE ILLUSTRATES THE IMPORTANCE OF HIGH STRUCK CAPACITY TO SCRAPER PRODUCTION AND PROFITS.

ONE-WAY HAUL — 6,390 FT.	M-R-S 190 & 25.5 C.Y. SCRAPER	ORDINARY 18 C.Y. THREE AXLE UNIT
Number of cycles timed	11	11
Average loading time, seconds	76	63
Average cycle time, minutes	9.85	9.75
Cycles per 50 minute hour	5.08	5.13
Pay yards per cycle (Estimated 90% bowl factor)	22.95	16.20
Pay yards per 50 minute hour	116.59	83.11
Estimated value of dirt per yard (Hauling only)*	20c	20c
Estimated gross income—50 min. hour	$23.32	$16.62
Estimated ownership and operating costs per hour**	$12.25	$10.45
Gross profit per 50 min. hour	$11.07	$ 6.17
Ratio of M-R-S production	140.3%	100%
Ratio of M-R-S profit	179.4%	100%
M-R-S extra profit over 10,000 hour life	$49,000	

*Estimated value of dirt is an arbitrary figure for hauling used for comparative purposes only and does not include cost of pusher, equipment on fill, overhead, etc.

**Direct ownership and operating costs figured on basis widely accepted by earthmoving industry.

THE GREATER THE HAULING CAPACITY PER UNIT THE LOWER THE OPERATING COST TO CHARGE TO EACH CUBIC YARD OF DIRT MOVED.

EACH M-R-S TRACTOR IS A HIGH SPEED POWER PACKAGE THAT OFFERS THE CONTRACTOR GREATER PROFIT POSSIBILITIES THAN EVER BEFORE

The table at the left is just one of many examples where **M-R-S** tractors equipped with exclusive **M-R-S hydraulic weight transfer** are chalking up new records of earthmoving performance. This table illustrates how the **M-R-S** formula of **GREATER CAPACITY *plus* FASTER HAULING SPEEDS *plus* SUPERIOR MANEUVERABILITY** results in greater production at lower cost per yard of dirt moved.

At today's highly competitive earthmoving prices this formula can mean the difference between profit and loss to the grading contractor. **Write for the new M-R-S "Earthmoving Packet." It will supply all the details of how M-R-S tractors can mean greater profit possibilities for you.**

Head of Technical Staff On St. Lawrence Project

Heading the special technical staff working under the U. S. section of the St. Lawrence River Joint Board of Engineers is Robert B. Hayes. As chief engineer, Mr. Hayes will be assigned to Massena, N. Y., the center of much of the construction on the $600 million power phase works of the St. Lawrence River project. Mr. Hayes had formerly been chief of engineering for the U. S. Army Corps of Engineers at Garrison, N. Dak., charged with construction of the multiple-purpose Garrison Dam on the Missouri River.

His staff includes six engineers who will be stationed at Massena, and two engineers in Washington, D. C. This latter office is headed by Raymond F. Stellar, deputy chief engineer, who has been a specialist on the St. Lawrence project.

The U. S. section, St. Lawrence River Joint Board of Engineers, working with a Canadian section, will pass on plans, specifications, and construction schedules of the Power Authority of the State of New York and the Hydro-Electric Power Commission of Ontario, the constructing agencies for the project.

Corbetta Elects Officer

Elected vice president of Corbetta Equipment Corp., a wholly owned subsidiary of Corbetta Construction Co., Inc., New York, N. Y., is Wallace Buhler. He had formerly been manager of the corporation, of which Roger H. Corbetta is president. The subsidiary maintains a million-dollar inventory of trucks, cranes, bulldozers, and other power-operated construction equipment in The Bronx, N. Y.

Wallace Buhler, newly elected vice president of Corbetta Equipment Corp.

Col. Trower Is Named Head Of Army Engineer Division

Col. Wendell P. Trower, formerly Great Lakes Division Engineer for the U. S. Army Corps of Engineers, has been appointed head of the new North Central Division, formed by the consolidation of the Upper Mississippi Valley Division, St. Louis, Mo., and the Great Lakes Division, Chicago, Ill. He will have headquarters in Chicago. Also under the new division are the Rock Island District, Rock Island, Ill., and the St. Paul District, St. Paul, Minn.

The St. Louis District has been made part of the Lower Mississippi Valley Division, Vicksburg, Miss., which is headed by Brig. Gen. John R. Hardin.

At the Waterways Experiment Station, Vicksburg, Miss., the Corps of Engineers has given new assignments to several engineers in the Soils Division. Audley Maxwell is assistant chief of the Flexible Pavement Branch; Charles I. Mansur, assistant chief of the Embankment and Foundation Branch; Joseph R. Compton, chief of the Environmental Study Section; and Robert I. Kaufman, acting chief of the Design and Analytical Section, Embankment and Foundation Branch.

In the Upper Mississippi Valley Division, Col. Fred E. Ressegieu, district engineer, St. Louis District, has been reassigned to the Research and Development Division, Department of the Army General Staff, Washington, D. C. Succeeding him is Col. George E. White, Jr.

Honor Maffitt's Contribution In Water Works Field

A parchment plaque for outstanding contribution to the field of water works engineering was presented to Dale M. Maffitt, president of the Des Moines, Iowa, Water Works, by Governor William S. Beardsley of Iowa. Joseph P. Lawlor, mayor of Ames, Iowa, made the presentation in the governor's behalf. Mr. Maffitt, who has been concerned with water works engineering on both national and state levels, was presented with the award following his election as president of the American Water Works Association.

Centriline Corp. Elects

William E. Borbonus has been elected president, and Kenneth K. Kirwan, vice president and chief engineer, of Centriline Corp., New York, N. Y., a wholly owned subsidiary of Raymond Concrete Pile Co., New York, N. Y.

Formerly president and chairman of the board of R-S Products Corp., Philadelphia, Pa., Mr. Borbonus succeeds James P. Cummins. Centriline Corp. owns patents for centrifugally applying cement-mortar lining to water, oil, and gas pipelines in place.

Stone & Webster News

Stone & Webster Engineering Corp. has made E. J. Ford a construction manager, giving him offices in the company's headquarters in Boston, Mass. For the last six years, Mr. Ford has been general superintendent on Stone & Webster projects for the Gulf States Utilities Co., Beaumont, Texas.

LOWER EQUIPMENT INVESTMENT. Contractors who already own one or more large four-wheel cable scrapers can sustain substantial savings in equipment investment by the purchase of M-R-S tractors to power them.

DON'T LET HIGH FILL PROCESSING COSTS ROB YOU OF YOUR EARTH-MOVING PROFITS

You can drastically reduce your fill processing costs by switching to the speed and economy of **M-R-S** heavy diesel wheel tractors.

Whether your compaction equipment includes heavy sheepfoot rollers or 50 ton rubber-tired compactors or both, the special towing-type **M-R-S** design makes **M-R-S** tractors ideal for increasing compaction production with a resulting reduction in compaction costs.

When intermittent rains require frequent discing, **M-R-S** tractors will get your operation to going sooner by aerating the fill up to three times faster than crawler tractors.

M-R-S tractors are manufactured in 125, 200 and 275 horsepower sizes. There is an **M-R-S** tractor to fit your operation.

Write for complete details today.

POWER FOR LARGE SHEEPFOOT ROLLERS. The special towing-type design of M-R-S tractors combined with plenty of power makes M-R-S tractors ideal for powering heavy sheepfoot rollers.

POWER FOR HEAVY BUSH AND BOG DISCS. When fill conditions require discing M-R-S tractors cover the fill at speeds fast enough to pulverize it for quick aeration to facilitate drying.

SHORTER NON-STOP TURNS. M-R-S tractors are capable of turning up to 135 degrees in relation to the scraper. Practical non-stop 180 degree turns may be made with scrapers up to 20 c.y. struck capacity in 28 to 34 feet.

POWER FOR 50 TON COMPACTORS. M-R-S tractors are capable of powering large rubber-tired rollers at speeds up to 10 m.p.h. Required compaction is secured at lower cost even with a larger number of hauling units dumping on the fill.

Investigate before you invest!

THE EMBLEM OF DEPENDABILITY M-R-S MANUFACTURING COMPANY

P. O. BOX 1206, JACKSON, MISSISSIPPI, U.S.A.

Crushed rock base for the turnpike is placed by a Jersey spreader, mounted on the dozer arms of an International TD24 tractor. The selected sandstone base material, from local quarries, is hauled to the site in dump trucks which reload the spreader in a matter of seconds.

Workmen use an Ingersoll-Rand form-pin driver in setting forms for the concrete slab. Air is supplied by the LeRoi self-propelled Tractair. Blaw-Knox 9-inch steel forms were used. *C&E Staff Photos*

Concrete Paving Speede

THE WEST VIRGINIA Turnpike, a new 88-mile highway which state officials hope to open for traffic this month, has been the scene of a whirlwind paving program. Since early last spring, four primary contractors have laid 3,000,000 tons of stone base and 1,600,000 square yards of concrete pavement. The job required plenty of overtime, big equipment spreads, and top-notch organization.

The turnpike design called for 14 inches of selected rock subbase topped by a 1-inch cushion of fine material and a 9-inch plain concrete slab 24 feet wide. The subbase was built up at least 9 feet beyond the slab on each side to support shoulder strips of 3-inch penetration macadam.

Stone Base

The heavy crushed-stone base was specified to provide at least 24 inches of free-draining frost-resistant material below the highway surface. The entire amount of base material was selected sandstone crushed at about nine local quarries. Stockpiles of as much as 250,000 tons each were built up during the winter to prepare for the fast base construction.

The first paving contractor to move in last spring was Nello L. Teer Co., Durham, N. C. Teer's contract covered base course and concrete paving along a 30-mile stretch in the center of the project. The 1,000,000 tons of stone base required was produced at three quarries by Lambert Bros., Knoxville, Tenn.

As grading work on the 30-mile stretch neared completion, Teer moved a big Marion 4-yard shovel into one of the stockpiles and began baling the crushed rock into a huge fleet of rented dump trucks. At the project site, two Jersey spreaders mounted on the dozer arms of International TD24 tractors unloaded the trucks in a matter of seconds and spread the rock in 4 to 6-inch compacted lifts.

Four 4,000-gallon tank trailers applied water as three Galion 10-ton rollers compacted the base. Rough shaping was accomplished by a Caterpillar No. 12 grader.

The tight schedule kept Teer busy, but he was organized for top production. In fact, when the weather was good, his crews laid anywhere from 10,000 to 20,000 or more tons of base a day, working two 10-hour shifts. Production occasionally reached 22,000 tons in a single day.

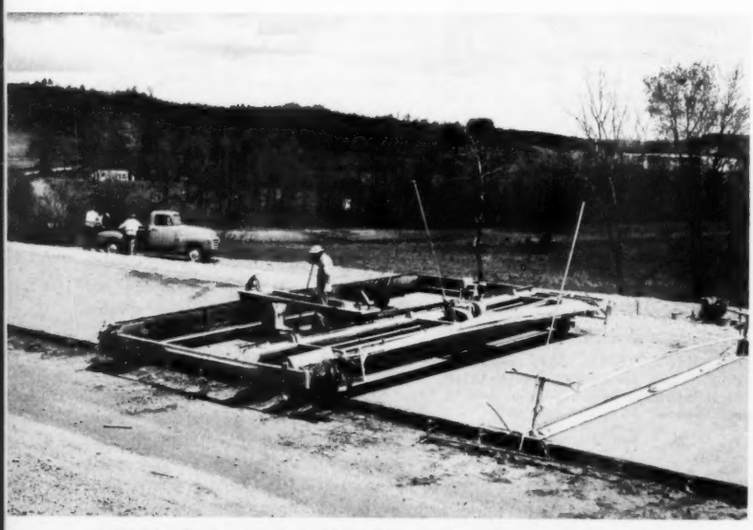
The 2-inch cushion of fine material was also laid with a Jersey spreader. This layer was composed of minus-1-inch material and was substituted for 1 inch of base and 1 inch of sand cushion.

Soon after Teer completed a stretch of base, Ballenger Paving Co., Greenville, S. C., an affiliate contractor, moved in concrete-paving equipment. Unfortunately, all of the grading work had not been completed in time, and the contractor had to tackle the job piecemeal.

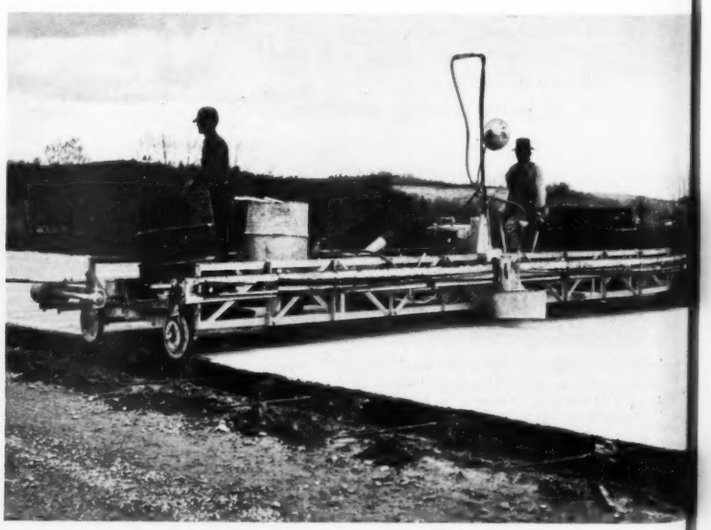
Batch Plant

A temporary batch plant was set up on the grade about three miles from the southern end of the job. Sand, coarse aggregate, and cement were trucked in and dumped in stockpiles after a 10-mile haul from the railhead.

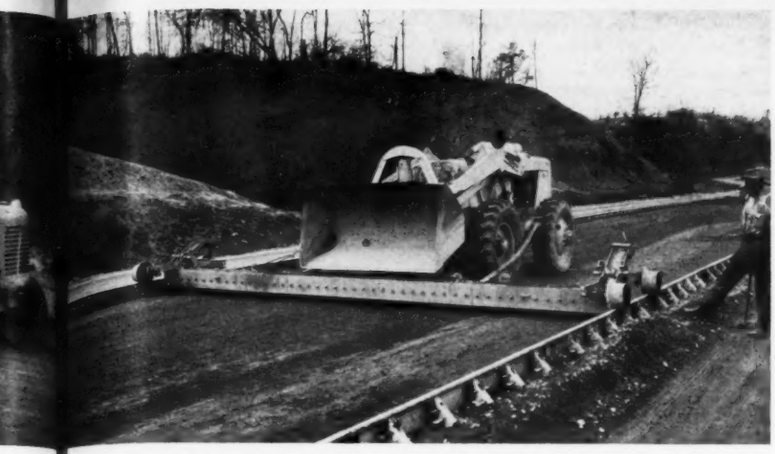
The plant consisted of three Blaw-



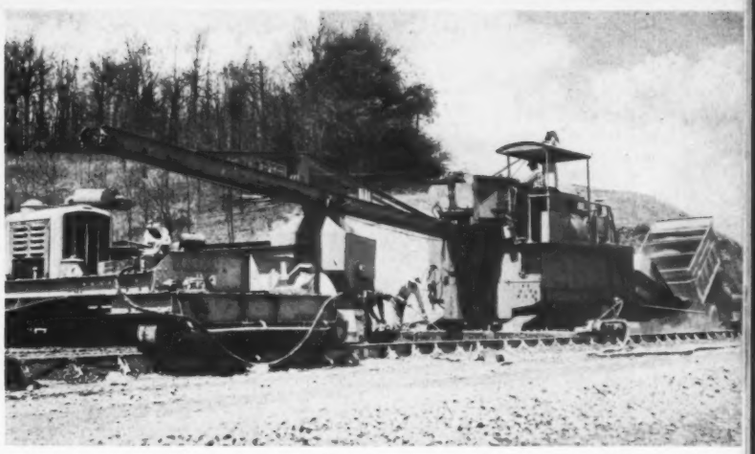
A Koehring longitudinal float which follows two transverse finishers is the fourth piece of equipment in the finishing lineup. Ballenger Paving Co., Greenville, S. C., did the work.



A broom attached to a moving belt on the front of this Heltzel machine etches a rough finish into the concrete surface, while Permite curing compound is applied from the rear end.



This unusual combination—a Cleveland Trailgrader pulled by a Hough Payloader—fine-grades a stretch of the West Virginia Turnpike before the paving gets under way. When excess material piles up, it is loaded into trucks by the Hough machine.



The paving spread for this job includes a MultiFoote paver and a Blaw-Knox spreader. Concrete is laid in a 9-inch lift across the 24-foot-wide highway. Note the heavy rock base. Here the paver is working between the forms.

de On West Virginia Pike

Compact batch-plant setup, unique joint-cutting rig spur work on final stretch of 88-mile highway

Knox batchers, one for coarse aggregate, one for cement, and one for sand. Batch trucks drove straight through the three units, loading up with little delay. Lorain and Koehring clamshells charged the batchers.

Fine-grade crews worked to keep at least 1,500 feet of forms set ahead of the paving spread. A Cleveland Formgrader removed the required amount of base material as Blaw-Knox 9-inch steel forms were set behind. Pins were driven with an Ingersoll-Rand driver supplied with air by a Le Roi self-propelled Tractair.

Excess material between the forms was removed with a Cleveland Trailgrader pulled by a Hough Payloader. The 24-foot-long grading rig was attached by two arms to the sides of the Payloader. When sufficient material built up in front of the Trailgrader, the Payloader would lift it from the forms by means of a cable sling hung over the bucket. The material was then loaded by the Payloader into trucks.

Final rolling was done with a Buffalo-Springfield tandem roller.

Paving Spread

At the beginning of the job, Ballenger used only one paver working between the forms. Later, however, when long sections of subbase were prepared ahead, the contractor worked two pavers side by side between the forms, and sometimes operated one between the forms and one outside.

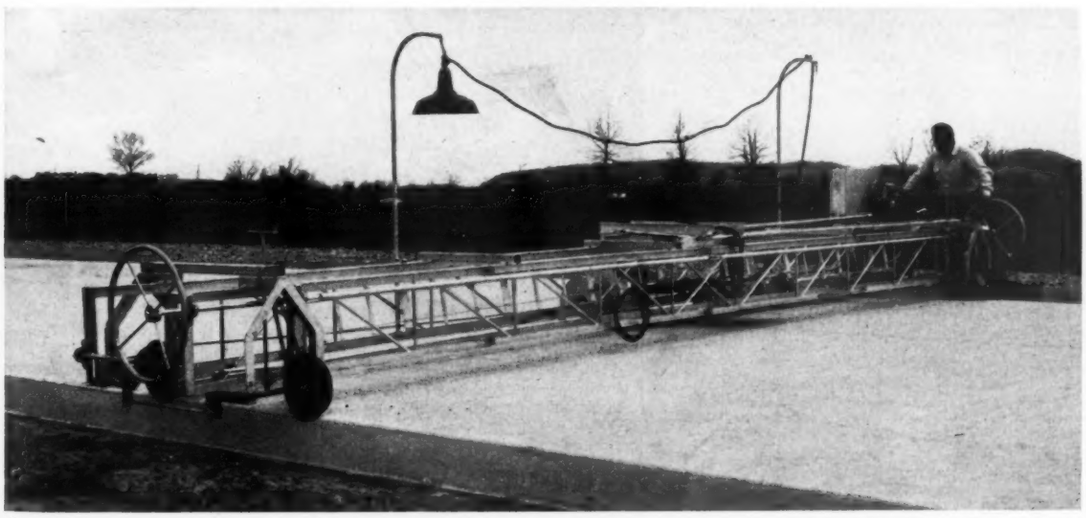
On the first paving section, concrete was mixed in a MultiFoote 34-E dual-drum paver and dumped in front of a Blaw-Knox spreader. A check planer was pulled by the paver to make final corrections in the grade. Two Viber machines were mounted on the rear of the spreader to vibrate the concrete next to forms.

Following the spreader were two transverse finishers, a Jaeger with diagonal rear screed for superelevated curves and a Blaw-Knox with screeds adjusted to form the 1½-inch crown on the straight stretches.

The fourth piece of equipment in the finishing operations was a Koehring longitudinal float. Following this was a Heltzel machine which

(*Concluded on next page*)

This lineup of Blaw-Knox bins permits batch trucks to get materials for the mix without backing up or otherwise maneuvering into position.



This experimental joint-sawing rig developed by W. F. Middlestadt of Seals, Inc., Baltimore, rides the edges of the slab and cuts both transverse and longitudinal joints in a single pass. Five motors operate the saws and the roller chains that move the transverse saw.

(Continued from preceding page)

etched a rough finish into the concrete surface with a broom attached to a moving belt on the forward edge of the rig. Permite curing compound was applied along the rear edge.

Ballenger averaged about 1,500 batches, or 2,500 cubic yards of concrete per 10-hour day.

Sawed Joints

Both longitudinal and transverse joints for shrinkage-crack control were sawed on the turnpike. There is no reinforcing steel in the slab except at bridge approaches and no expansion joints except at the bridges.

Ballenger used an experimental cutting rig developed by W. F. Middlestadt, president of Seals, Inc., Baltimore, Md. The unit is mounted on wheels that ride either the forms or the edges of the slab. It has four electric-powered 14-inch saws, two for transverse joints and two for longitudinal joints. The structural frame consists of two 26-foot-long pipe trusses with double-angle top and bottom chords.

Power is supplied by a 25-kw generator mounted on a truck. Only five motors are required; four run the saws, and the fifth drives the roller chains that move the track-mounted transverse saw across the slab. During longitudinal cutting, this motor drives the entire rig forward.

The electric power feature has several advantages. It is reliable, reduces vibration, simplifies the operation, and provides lighting at night. Ballenger discovered that all joints, both transverse and longitudinal, could be sawed with one pass of the machine, thus eliminating the need for sawing the transverse joints first and the longitudinal joint in a subsequent pass. Transverse joints were sawed 18 feet apart.

J. R. Chandlee is project manager for Ballenger Paving Co. B. W. Hudgins is area engineer, and C. H. Peterson is project engineer for Howard, Needles, Tammen & Bergendoff, general consultant. A. M. Palm is project engineer for Fay, Spoffard & Thorndike, consulting engineers for the southern section of the turnpike. THE END

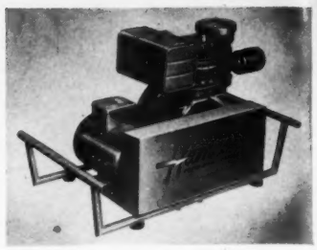
Subsoil Investigation

■ A brochure dealing with subsoil investigation has been released by Soil Testing Services, Inc., 3521 N. Cicero Ave., Chicago 41, Ill.

Actual procedures for drilling and sampling underlying soil strata are analyzed with specific reference to the methods which will produce the least-disturbed samples. Soil tests such as unconfined compression, triaxial compression, consolidation, and compaction are described and illustrated.

Other topics treated in the brochure include field testing and control; planning the soil investigation, and research and engineering consultation.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 157.



New Power Generator

■ A new portable power generator is being produced by Hamden Machine Products, Inc., 44 Kendall St., New Haven, Conn. The Hamco Model M-200 has a 2,000-watt output with an 8-hp Briggs & Stratton engine. A smaller model has an output of 1,250 watts with a 2-hp engine.

For further information write to the company, or use the Request Card at page 18. Circle No. 156.

C.I.T. Corp. Agent

J. M. Baysden of Huntington, W. Va., has joined C.I.T. Corp. as the firm's West Virginia representative.

A subsidiary of C.I.T. Financial Corp., C.I.T. Corp. serves business and industry in the installment financing of machinery and equipment. At present, the company is serving some 90 industries. Mr. Baysden will make his headquarters in Charleston.

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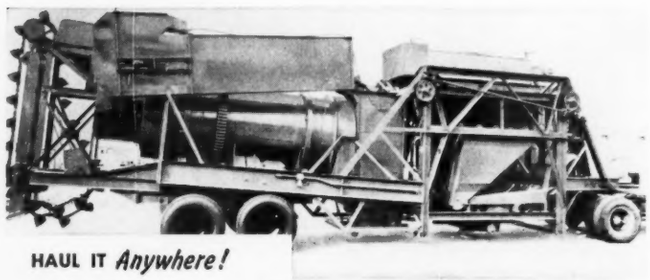

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Perfect for rural areas . . . for hard-to-reach locations, for state highways and county and township roads. Truck tractor hauls plant easily. Now you can profitably handle jobs that size and distance formerly eliminated or made extremely expensive.

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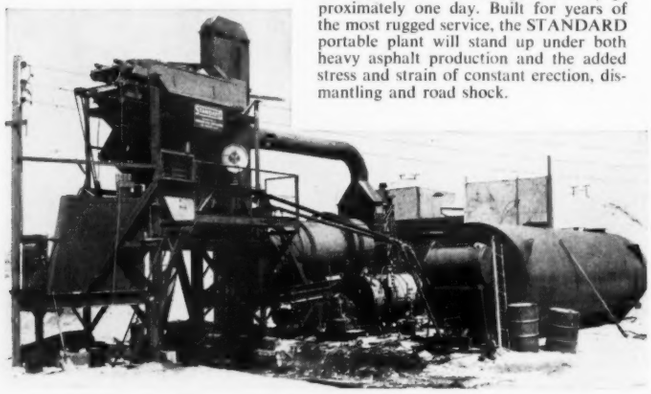
The entire unit, including cold and hot elevator, can be put in working position in as little as 2½ hours. Estimated erection or dismantling time for complete plant, including boiler and storage tank, is approximately one day. Built for years of the most rugged service, the STANDARD portable plant will stand up under both heavy asphalt production and the added stress and strain of constant erection, dismantling and road shock.



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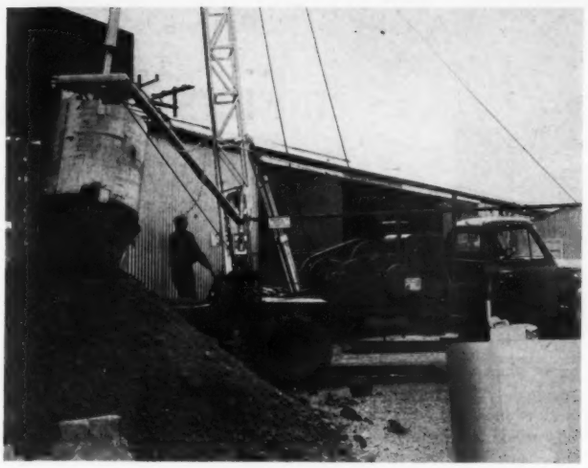
ANTHONY COMPANY
STREATOR, ILLINOIS



Calweld bucket-type earth drills, made by the California Welding & Blacksmith Shop, are now supplied with a positioning arm that makes it possible to control the bucket from a safe position.

Safety-Arm Positions Bucket-Type Drill

■ Bucket-type earth drills, made by the California Welding & Blacksmith Shop, Inc., 7222 E. Slauson Ave., Los Angeles 22, Calif., are now equipped with a special bucket positioning arm which swings the bucket mechanically to the desired dumping position. The new device is operated from the control panel located at a safe distance and is powered by a winch hoist. Formerly, the bucket drill was manually swung to a dumping position away from the hole.

The control arm will be supplied as standard equipment on all models of Calweld earth-boring machines which drill holes 100 to 200 feet in depth and 16 to 84 inches in diameter. It is also available for installation on older models.

For further information write to the company, or use the Request Card at page 18. Circle No. 155.

New Blast-Hole Rig Drills To 400 Feet

■ A mobile drill designed especially for drilling of vertical blast holes is announced by the George E. Failing Co., 424 E. Broadway, Enid, Okla. The Model CBH Holemaster combines a hydraulic chain feed for speedy drilling with the use of compressed air for the removal of cuttings.

Rated capacity is 400 feet using 2⅞-inch drill pipe. Hole diameters vary from 4¼ to 6¼ inches, depending on formations and depth.

The Failing drill is completely self-contained, requiring no auxiliary equipment for its operation. Components are easily serviced and controls are conveniently grouped. Pivot-mounted back-up tongs and roller-type slips facilitate breaking joints and adding drill pipe.

The Failing Model CBH Holemaster drill.

For further information write to the company, or use the Request Card at page 18. Circle No. 122.

How One CONTRACTOR MADE MONEY

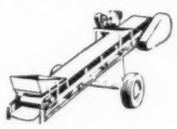
with a WILLARD "Task Force"

...on 3 jobs and moved 371 miles and placed 10,000 C. Y. in '53

COMPLETELY FREE from central-mix plants and plant erection costs, this contractor handled three specification concrete jobs and moved his Willard equipment a total distance of 371 miles. They were extra profitable because he used the completely mobile Willard self-loading Weigh-Batcher, Conveyor and two Truck Mixers. He batched and mixed up to 30 cu. yds. per hour on the job using stock piled aggregates and bulk cement. There were no erection costs beyond digging a shallow pit for the foot of the conveyor . . . no loss of time by placing crews waiting for deliveries . . . and no shipping costs because the equipment moved on its own wheels under its own power.

If you are missing those *profitable* out-of-town jobs it will pay you to get the facts; write for the "Willard Way" booklet.

WILLARD Weigh-Batch Loader



WILLARD Mixer Loading Conveyor

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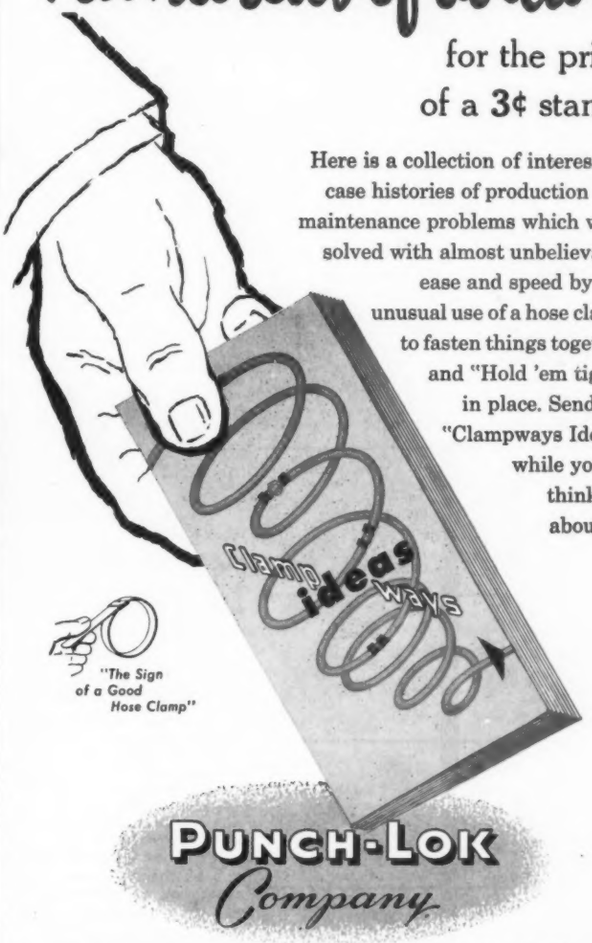
BATCH and MIX on the job!

ideas...worth

hundreds of dollars

for the price of a 3¢ stamp

Here is a collection of interesting case histories of production and maintenance problems which were solved with almost unbelievable ease and speed by the unusual use of a hose clamp to fasten things together and "Hold 'em tight" in place. Send for "Clampways Ideas" while you're thinking about it.*



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Piers Built Inside Cell

Dravo's floating rigs—a 45-ton derrick boat at right and two 15-ton derrick barges—set steel sheets in place for the cellular cofferdams. *C&E Staff Photo*

HIGH TIDES and a tricky riverbed are providing some interesting problems for the builders of the new Bangor-Brewer bridge over the Penobscot River in eastern Maine.

When preliminary borings indicated variable rock conditions, the consulting engineers—Harrington & Cortelyou, Kansas City, Mo.—reasoned that the river pier foundations would have to be excavated in the dry to enable the field engineers to determine when sound bedrock had been reached. A river that is 45 feet deep and with a 19-foot tidal range naturally made the problem a complex one. For that reason, subcontractors were invited to submit their own plans for doing the substructure work.

As specialists in sheet-pile construction, the Dravo Corp., Pittsburgh, Pa., submitted a bid on a plan to construct the river piers inside large cellular cofferdams. Filled with sand and gravel, the 6-cell cofferdams would be stable against the tide and reasonably leakproof to permit dry excavation.

Dravo was subsequently given the job of building four river piers and one land pier in a subcontract with the Verrier Construction Co., Portland, Me. Verrier is doing all other work on the bridge and approaches. Work on the $2,038,000 job was begun in May, 1953, and is expected to be completed by November of this year.

Approach Problem

The new toll structure is being built by the Maine State Highway Commission to carry U. S. 1 between Bangor and Brewer, and to relieve local traffic congestion which builds up during rush hours. An existing bridge upstream from the new span has a reasonably good roadway, but is hampered by an approach system with a very poor diffusive capacity.

The new bridge will have a 28-foot roadway and two 6-foot sidewalks. The 7-inch reinforced-concrete deck slab will be carried by five river spans of continuous deck girders and eleven approach spans on the Bangor side of continuous steel beams. The four girders for each span are spaced 9 feet 8 inches apart. They are 6 feet deep in the middle and 9 feet deep at the haunches. Total length of the bridge is 1,406 feet. Clearance over high water is 19 feet.

Over the river, the bridge slopes toward Brewer on a 1.84 per cent grade. The main span is 180 feet long and the secondary spans on each side are 150 and 120 feet long.

Foundation

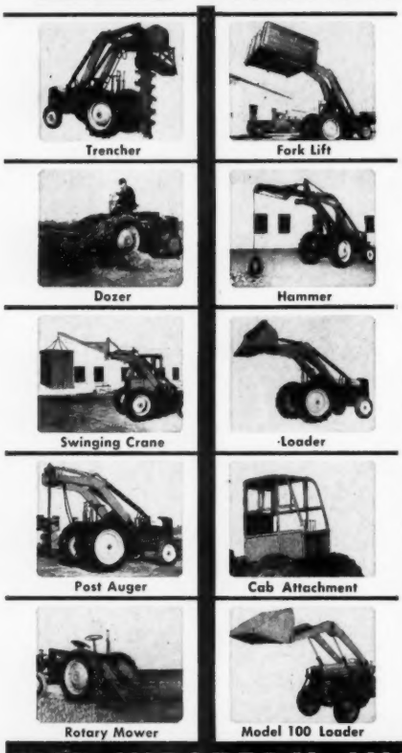
All pier shafts and abutments are constructed on concrete foundations bearing on rock, except the Brewer abutment which rests on steel H-piles. The largest foundation is 14

The Davis Pit Bull

Patent Pending

Replaces... HIGH-INVENTORY EQUIPMENT 11 TO 1

11 Attachments... to 1 Basic Unit



Here is a low-cost single unit that fits Ford or Ferguson tractors with 11 attachments that replace high-cost industrial machines.

Any of the attachments can be fitted to the basic ***Pit-Bull*** unit in only a few minutes, and another job is underway with the same operator at the fingertip controls.

the **PIT-BULL**

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...Now, Look at Your Profit Margin

The basic ***Pit-Bull*** hydraulic power unit is attached to your Ford or Ferguson tractor by your dealer. This includes the installation of a syncro-mesh transmission with underdrive, providing four speeds in either direction and permitting you to change direction without shifting gears.

The driver's seat and steering controls are reversed, and ***Pit-Bull*** control levers installed so that the operator can manipulate the unit hour after hour *with ease and comfort*. This rear conversion enables the operator to maintain simultaneous control over the hydraulic operation and the tractor as well as to have a perfect view of the working area.

Attachments can be changed in a matter of minutes, and you buy only the attachments your particular job or operation requires. *See your dealer.*

The Davis Pit-Bull is manufactured by the makers of the Davis Model 100 Loader, America's quality front-end tractor loader.

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Cellular Cofferdams

Deep Penobscot River demands heavy-duty cofferdams for constructing new Bangor-Brewer bridge in Maine

A P&H Miti-Mite truck-mounted crane with clamshell bucket excavates for the approaches to the bridge. Verrier Construction Co., Portland, Me., has the contract for this phase of the project, which requires removal of 20,000 cubic yards of earth and placing 2,700 tons of bituminous-concrete pavement. *C&E Staff Photo*

feet wide, 51 feet long, and about 20 feet deep. Height of the pier shafts ranges from 34 to nearly 46 feet. The tops measure 37 x 6 feet. Upstream faces are battered 2½ inches per foot and downstream faces ½-inch per foot.

Floating Rigs

Dravo moved in on the job early in June, 1953, and set up a yard near the site on the right bank of the river. Because pier 14 was in the deepest water, work was started there so that the sheet piles could be cut off and used over again. All handling and driving is done by a fleet of floating rigs consisting of one 45-ton derrick boat and two 15-ton derrick barges.

The cellular sheet-pile cofferdams are made up of six cells—two on the left side of the pier, two on the right, and one at each end. Cells are connected by sheet-pile closure arcs and have a diameter of 32 feet 3 inches. A timber template is positioned and anchored into place by steel spuds. It is then hung above high tide to prevent its floating while the operation of setting and driving sheet piling is in progress. Ordinarily, such a template would have been allowed to float, but because of the wide tidal range it was decided to keep the template in one place.

The 50-foot sheets are then set in place around the template and driven to rock with a McKiernan-Terry 9B3 steam hammer. Each cell requires 76 sheets. As a cell is completed, it is filled with riverbed gravel. Cells and arcs are set this way until the coffer is closed. About 700 pieces of sheet piling are required for each cofferdam.

Before the unwatering operation, the cofferdam is braced laterally with two double 24-inch steel struts placed between two cells. Concrete caps up to 18 inches thick are poured on top of the cells carrying the struts to help absorb the stress.

Flood Gate

Another device that must be built

(Continued on next page)

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NOW AVAILABLE IN SOUTHEAST

Write for complete information

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TWICE THE PRODUCTION — FOR THE SAME $ INVESTMENT

The clay digging job shown in the picture and reported in the adjacent column is being excavated as shown in the sketch above. Successive cuts are taken at an average depth of 6-8 feet with 105's which provides fastest digging with no danger from undercutting.

Digging in clay without the benefit of preliminary ripping or drilling and shooting was the basis of the test between this Eimco 105 and an ordinary front end shovel loader of equal size and price.

Four trucks of the same size, design and manufacture were used. Two were assigned to each loader.

Results — the Eimco 105 could dig the hard clay easily and load quickly with an inexperienced operator at the controls. One day's production — 153 trucks with the Eimco waiting on trucks much of the time.

The ordinary shovel loader had difficulty digging, was slow to maneuver and loaded 75 trucks in the same time with trucks waiting to be loaded all the time.

This customer bought its second Eimco 105 a week after the first was on the job.

Eimcos deliver on all types of jobs and you can have — "Twice the production for the same $ investment" — when you use Eimco 105 tractors with loading attachments.

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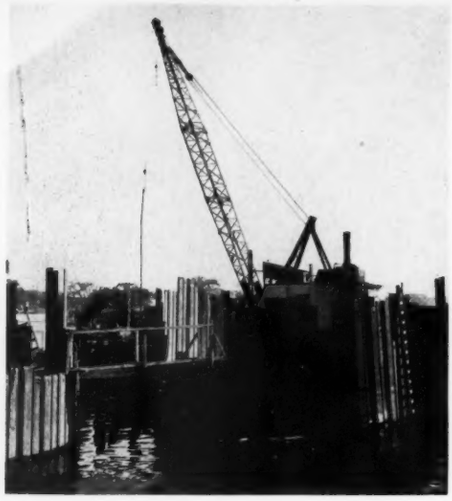

A close-up view of the derrick boat setting pile in place for the cells of the cofferdam. Six cells 32 feet 3 inches in diameter make up each cofferdam. Seventy-six steel sheets are required for each of the cells, which are later filled with riverbed gravel.

C&E Staff Photo

(Continued from preceding page)

into the cofferdam before unwatering is the flood gate. If any trouble develops while the cofferdam is being unwatered, a gate must be available that will quickly admit river water to fill up the inside of the coffer before it blows apart. The left closure, therefore, is cut down and fitted with a 12-foot-high flood gate composed of 6 x 12 timber needles which can easily be pulled out if necessary.

When the cofferdam is prepared, a 15-inch vertical lift pump powered by a 125-hp electric motor is set up to begin removing the 40 feet of water. The pumping is not done all at once, however. Because of the soaked condition of the gravel inside the cells, pumping must be carried on slowly to allow the cells to drain. Otherwise, the difference in head would probably cause them to blow. Drainage is taken care of by weep holes burned into the sheets as the water level drops.

When the cofferdam has been unwatered to low water level, pumping is halted and the cofferdam is allowed to withstand two successive high tides. This permits the cofferdam and the struts to become adjusted. Grout is then placed between the struts and the cell caps.

The vertical lift pump continues pumping until the water level reaches the bottom of the 40-foot-long shaft pipe. Then smaller pumps take over, pumping the rest of the water up to a receptacle on the bottom of the shaft pipe, from which it is lifted out of the cofferdam.

Cofferdam Problem

Clamshell and hand excavation then follows to clean the bedrock. And here is where an interesting problem arose on pier 14. After the cofferdam was unwatered, workmen went down inside to prepare the bedrock for the concrete base. What they found, however, was not bedrock but a conglomerate of tightly compacted boulders. When the sheets were driven to refusal, the crew naturally concluded that bedrock had been hit.

The only answer to the problem was to build a sheet-pile skin-type cofferdam inside the cellular cofferdam. Sheets 15 feet long were set in place just inside the walls of the cells. Workmen were then sent in with picks and crowbars to remove the boulders as the sheets were driven. A two-level timber frame was lowered inside as the inner cofferdam was excavated. Wooden forms were then set in place and the concrete base poured.

Above the base, conventional placing methods are used on all piers. Timber forms faced with ¾-inch plywood panels are fabricated on shore and set in place with one of the derricks. Transit-mix trucks haul to the shore, where they dump into Dravo 2-yard buckets. On piers close to the shore, one derrick can pick up the bucket directly offshore and also reach the pour. When the middle piers are poured, an intermediate derrick transfers the bucket from shore to a diesel-powered scow which transfers it to the derrick placing the concrete. Pours average about 450 yards, or 30 yards an hour.

Approaches

Verrier Construction Co. has the tricky job of altering considerable portions of streets in both cities to create a good approach system. Approaches require the removal of 20,000 cubic yards of earth and the placing of 2,700 tons of bituminous-

MUSCLES OF STEEL
took the load off his back

Sweat and a strong back just aren't enough when it comes to meeting the stepped-up demands of modern construction work. Today's contractors and builders call on *muscles of steel*—sturdy wire rope—to lift and carry their heavy loads.

Supplying these *muscles of steel* to the giant that is American industry is our big job here at Wickwire—a job that has commanded our vigilant care and painstaking quality control for over half a century.

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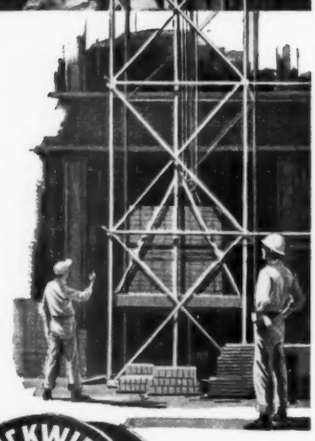

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By L. W. Nijboer

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184 pp., 51 illus., $4.00.

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concrete pavement. Verrier also has the job of building ten piers and pouring the concrete deck on the bridge. Forms with plywood facing and Williams ties are all prefabricated. Even abutment forms weighing up to 8 tons are prefabricated and then set in one piece. All concrete is transit-mix.

The job, which is followed closely by all of the Bangor newspapers, hit the front pages one day when routine excavation work in the river unearthed an old and very rusty 5-foot-long cannon. Rumors took several paths until local historians finally agreed that the ancient artillery piece with the 4-inch bore was probably left over from the Revolutionary War. It was in this area that the American fleet scuttled about 40 ships when the British approached in 1779. Dravo sent the relic to its museum in Pittsburgh. To date, a total of four cannons has been found on the job.

Personnel

W. Roy Switzer is superintendent for Dravo Corp., David Clark is superintendent for Verrier Construction Co., and Zint Wyant is resident engineer for Harrington & Cortelyou, consulting engineers. The work is under the direction of the Maine State Highway Commission. Max L. Wilder is bridge engineer for the commission, and Lucius Barrows is chief engineer. THE END

Drag-Scraper Buckets

■ A booklet illustrating the various standard types of Sauerman Crescent drag scraper buckets, as well as models of special design, is available from Sauerman Bros., Inc., 522 S. Clinton St., Chicago 7, Ill. Typical uses of this equipment are shown by a number of action photographs. The booklet also contains a discussion of the use of Crescent scrapers with boom machines and tractors.

Buckets for power drag-scraper work on which the material weighs up to about 100 pounds per cubic foot are designated as lightweight and are available up to 5 cubic yards in size. Heavyweight scraper buckets for more dense material are listed in sizes up to 14 cubic yards with teeth and 4 cubic yards without teeth. Mammoth scrapers with as many as 14 teeth are made in 10, 12, and 15-cubic-yard sizes. A page listing available accessories shows scraper wearing blades, manganese-steel runner blades, and three types of scraper teeth, as well as carriers for track-cable operation of scraper buckets.

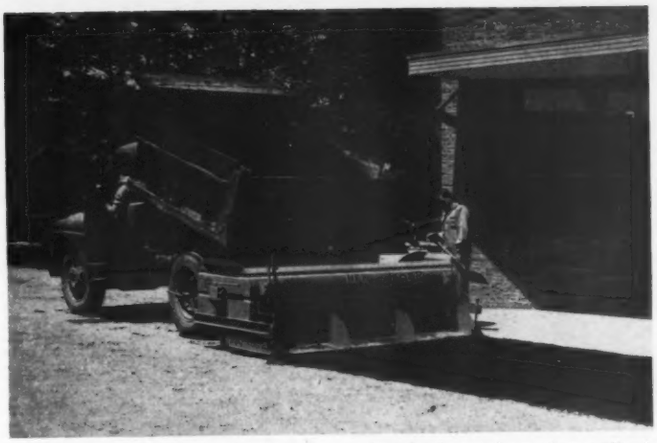
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 15.

Bituminous Spreader

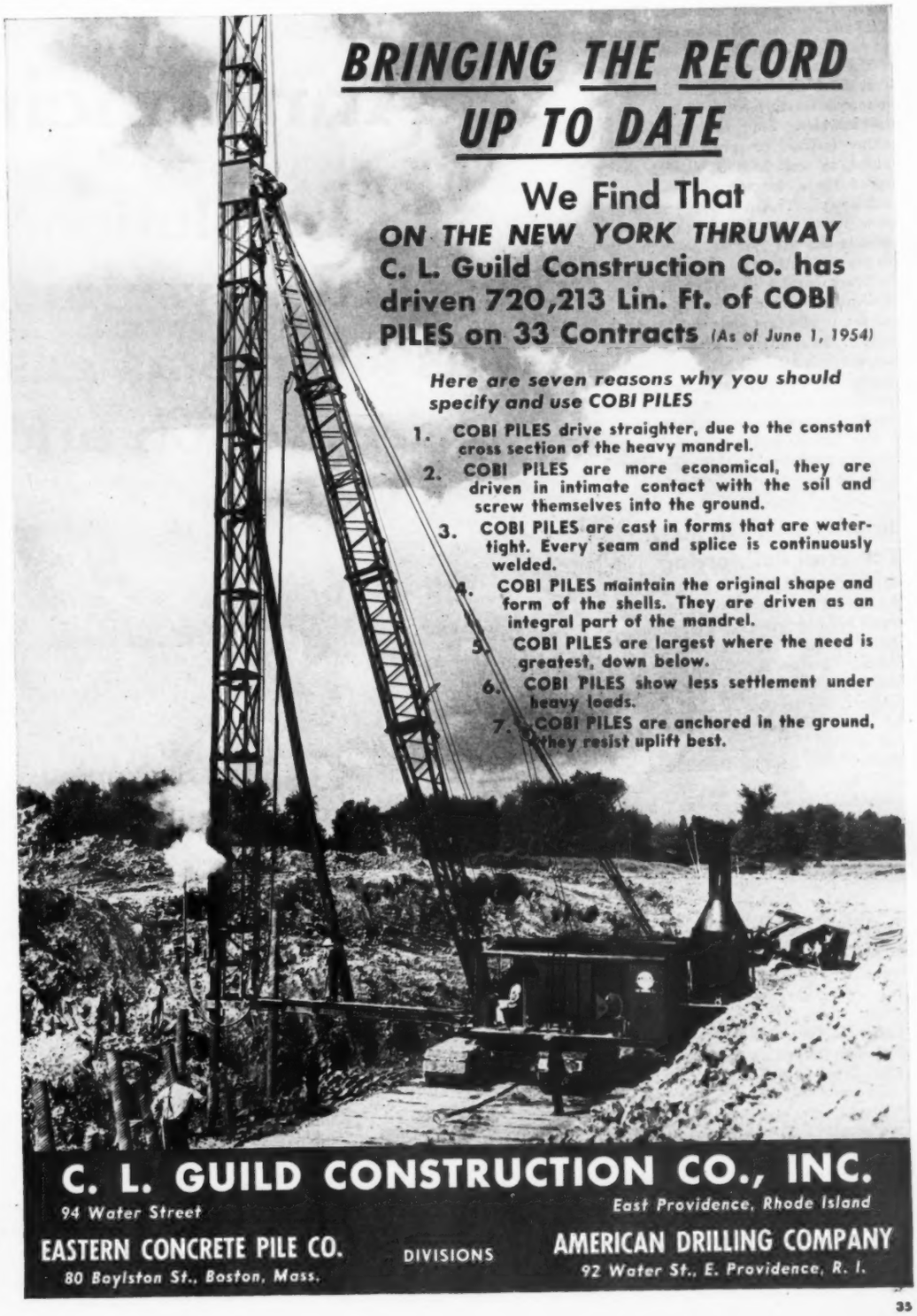
■ A new bituminous concrete and aggregate spreader for hot and cold mix applications has been announced by the Highway Equipment Co., Inc., 616 D Ave. N. W., Cedar Rapids, Iowa. This tow-type spreader features a staggered wheel arrangement consisting of ten pneumatic-tired wheels which keep the unit level at all times to produce a level finish course.

Another feature is a hydraulically operated shutoff gate which allows the operator to start or stop the flow of material from the hopper.

The spreader's screed is adjustable from ½ to 8 inches. The unit handles rock up to 4 inches in size for base course. It is available in 8, 9, 10, and 12-foot spreading widths. Motor-driven auger-type agitators are available in the 10 and 12-foot-width models to insure an even feed.



For further information write to the company, or use the Request Card at page 18. Circle No. 160.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East Providence, Rhode Island
EASTERN CONCRETE PILE CO.
80 Boylston St., Boston, Mass.
DIVISIONS
AMERICAN DRILLING COMPANY
92 Water St., E. Providence, R. I.

The new Model LH-75 Trojan Loadster features a direct drive from the engine through a torque converter to the transmission.

Trojan Loadster Design Eliminates Clutches

■ A new ¾-cubic-yard struck measure Trojan Loadster has been added to the line of the Contractors Machinery Co., Inc., Clinton St., Batavia, N. Y. The Model LH-75 Trojan Loadster has been designed so as to eliminate all clutches.

The new Trojan Loadster has a direct drive from the engine through a torque converter coupling to the transmission. Four working speeds either forward or reverse are provided, as well as a fifth, or high-speed range, for traveling.

Like all Trojan Loadsters, this new model loads over the drive wheels and the load weight is used to provide extra traction. This feature, combined with the torque multiplication provided by the converter, produces a powerful surging crowd. In addition to smooth loading through multiplied torque, there is an automatic progression to straight coupling drive reported to result in economy when traveling.

For further information write to the company, or use the Request Card at page 18. Circle No. 70.

Improvement in Mesh For Wall Reinforcing

■ The cross bars of all Wal-Lok horizontal mortar-joint reinforcing mesh are now galvanized for protection against rust, according to Adrian Peerless, Inc., 1442 Grace St., Adrian, Mich. Galvanizing is applied only to the section exposed to the air when Wal-Lok is used as a wall tie or as wall reinforcing. Deformed and knurled stretcher rods and those portions of cross bars embedded in mortar are still bare steel for maximum bonding qualities.

For further information write to the company, or use the Request Card at page 18. Circle No. 47.

Data on Lifting Crane

■ Bulletins covering its recently introduced Lima Type 703-SC lifting crane, available on crawler, truck, or wheel mountings, have been released by the Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio.

On crawlers, the new unit has a lifting capacity of 50 tons at a 12-foot radius with a 50-foot boom. Its capacity is 2,875 pounds at a 110-foot radius with a 130-foot boom. Crawlers are 18 feet 6 inches in length and 14 feet 2 inches in width.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 73.

Pocket-Size Rule Measures Board-Feet

■ A new pocket-size lumber rule that reads directly in board-feet is offered by Lumtape Corp., P. O. Box 614, Hillside, N. J. The Lumtape can be carried in the pocket for on-the-spot measurements and is particularly recommended by the manufacturer for quick estimation of board-footage in construction work.

Its obvious advantage is that no time-consuming arithmetic is necessary to convert board-feet because the rule reads directly. A thumb-lock holds the blade extended.

The rule is calibrated for even and odd lengths up to 16 board-feet. Tipped by a hook, the blade can be extended 10 feet for checking doubtful lengths. Standard ⅛-inch markings are included.

For further information write to F. A. Renard at the Lumtape Corp., or use the Request Card at page 18. Circle No. 104.

Mechanical Products Forms Mortemp Division

The Mechanical Products Mfg. Co., Seattle, Wash., has purchased the Mortemp Heat Machine Co., also of Seattle, and will operate the latter company as a division. Mechanical Products manufactures Star oil burners and Sun-Glow furnace units, and its new Mortemp Division will make heating equipment exclusively.

Donn Schinman, factory representative for Mechanical Products for eight years, is manager of the new division, and Donald B. Olsen, who formerly represented the Mortemp Heat Machine Co., is sales manager.

Announcing...

revolutionary new diesel fuel system... as simple as gasoline carburetion and ignition

Exclusive PT Fuel System now standard on all Cummins Diesels

- Drastically reduces maintenance costs
- All mechanics can understand and service it
- Pump weighs only 13 pounds—system has no racks, check valves, metering plungers, discs, floats, etc.— does not have to be timed to engine
- Adaptable to all Cummins Diesels built since 1932

Write for your copy of descriptive folder "Cummins PT Fuel System."

CUMMINS **Cummins**

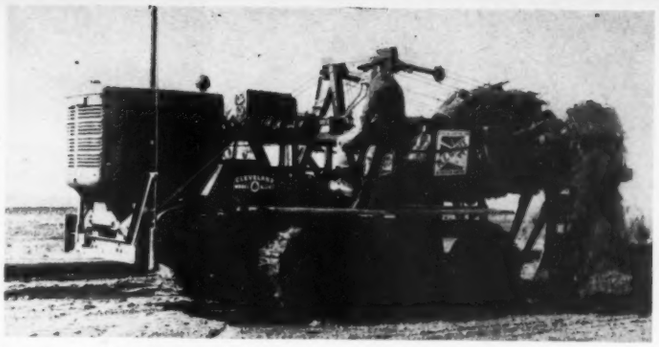
Engine Company, Inc., Columbus, Indiana

Leader in rugged, lightweight, high-speed diesels (60-600 h.p.)

Wheel-Type Trencher

■ A new trenching machine which can be used for pipelines and similar construction jobs has been introduced by the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio. The Model 240 is a crawler-mounted wheel-type trencher that digs up to 36 inches wide and 6 feet 3 inches deep. Three optional bucket sizes give a trench-width range from 20 to 36 inches. The unit has a low ground-bearing pressure of 6.3 psi.

The machine's digging wheel uses a front upper truck as well as a rear upper truck. This additional truck, 3 inches in diameter and mounted on self-aligning bearings, supports the digging wheel independently of the driving sprockets, providing smooth digging action and adding life to the sprockets, shafts, and other parts.

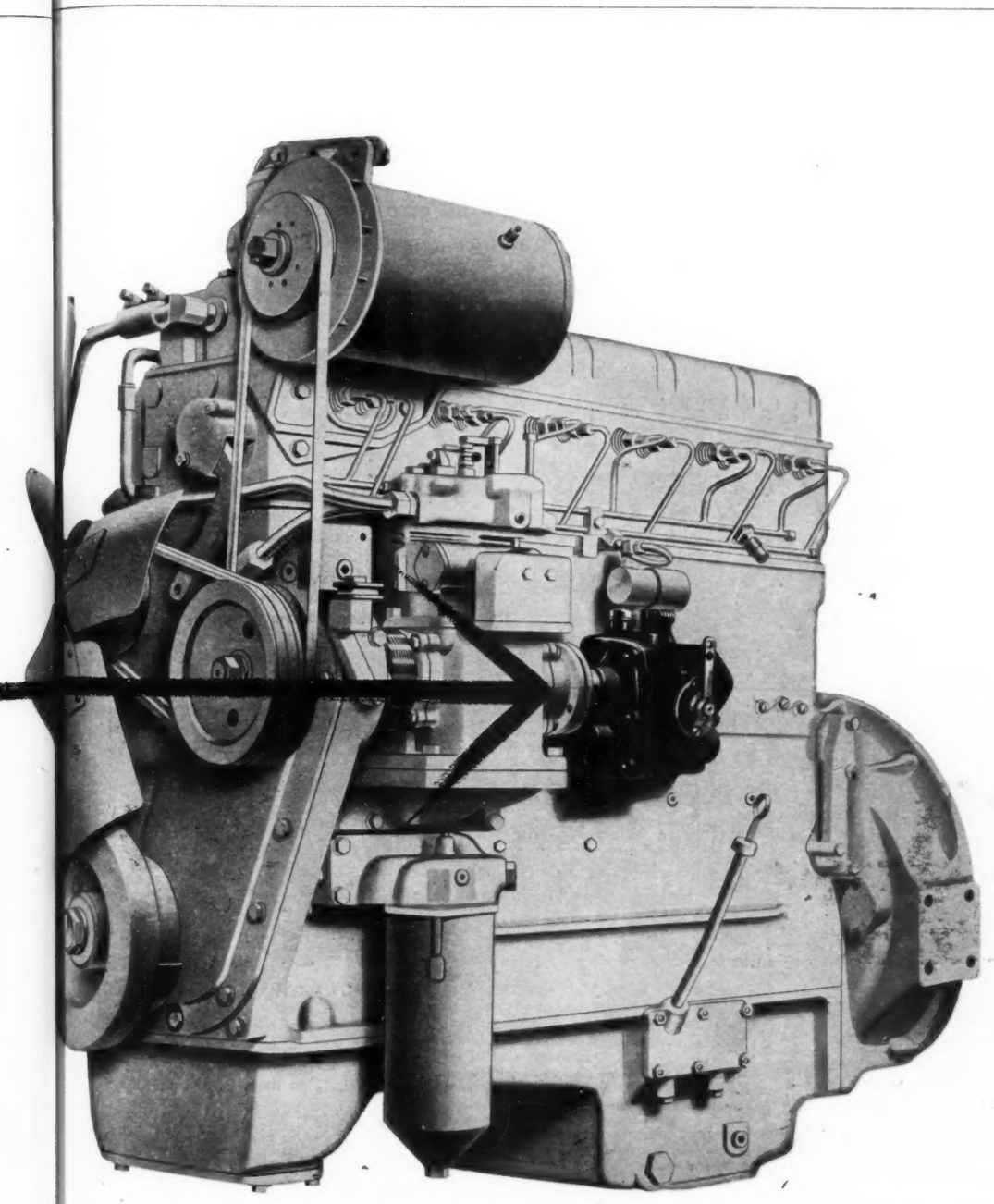


The new Cleveland Model 240 trencher digs a trench up to 3 feet wide and 6 feet 3 inches deep.

Another feature of the new model is a crawler kick-out clutch for stopping the crawlers without halting the digging wheel's operation.

A 30-inch-wide reversible conveyor discharges spoil on either side. Over-all length of the Model 240 is 24½ feet, and road width is 8 feet. The unit is powered by a 460-cubic-inch diesel engine delivering 65 hp at 1,200 rpm. Fifteen buckets are mounted on the digging wheel in 3 patterns.

For further information write to the company, or use the Request Card at page 18. Circle No. 100.



Design Improvements For Mobile Excavator

■ Three new design changes in the Gradall multipurpose earthmoving machine have been announced by the Gradall Division of the Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.

The most important improvement is a simplified method of mounting the three-unit pump supplying hydraulic pressure for machine operation. Formerly chain-coupled to the drive shaft, the pump is now connected directly to this shaft.

A second change is a new engine instrument panel, including an engine-hour meter, placed within the operator's cab. This enables him to remain in the cab and have complete control of the machine at all times.

A third upperstructure improvement is the relocation of the swing flow valve to simplify its adjustment.

For further information write to the company, or use the Request Card at page 18. Circle No. 102.

Process for Making Lightweight Aggregate

■ A sintering process for producing lightweight aggregate from clay, shale, fly ash, coal waste, and other industrial residues is described in literature from Dwight-Lloyd, Inc., a division of Sintering Machinery Corp., 322 Sinter Ave., Netcong, N. J.

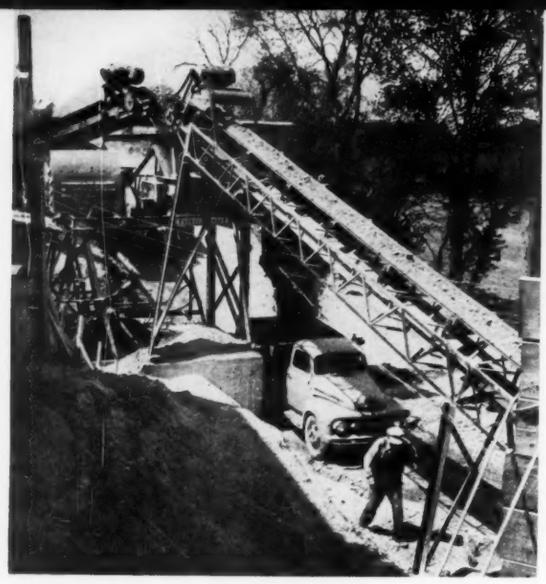
The Dwight-Lloyd sintering process, according to the booklet, offers economies in producing lightweight aggregate without sacrifice of product quality. Fuel requirements are reportedly low, constituting only 4 to 10 per cent by weight of the inert raw material. A 50-foot Dwight-Lloyd sintering machine has a nominal capacity of 425 cubic yards per day and has produced at rates of more than 600 cubic yards per day.

The lightweight aggregate produced is used in the manufacture of building material such as lightweight concrete masonry units, monolithic concrete, prestressed concrete, floor systems, precast walls and roof structures, brick, tile, and refractory concretes.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 96.

Sheffield Steel Corp. Consolidates With Armco

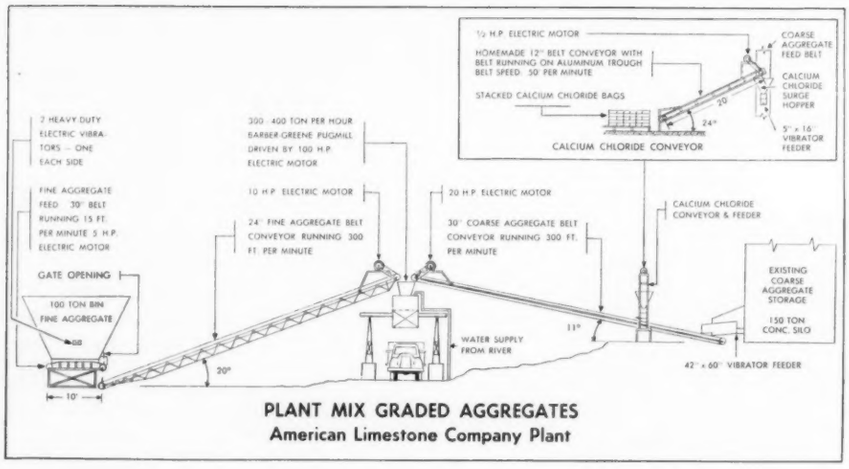
Sheffield Steel Corp., Kansas City, Mo., a wholly owned subsidiary of Armco Steel Corp., Middletown, Ohio, has been consolidated with Armco and will be known as Sheffield Steel, Division of Armco Drainage Corp. The change, made for corporate reasons, will not affect the functions or officials of the new division.



Left: Coarse aggregate and calcium chloride, fed by the conveyor belt at the left of the picture, and fine aggregate, carried on the belt at the right, are dumped into the Barber-Greene pugmill, while the dump truck underneath is loaded with the mix.
C&E Staff Photo

Right: A close-up view of the materials being fed into the pugmill hopper.

Plant-Mixing Assures a Uniform Road Base


½ H.P. ELECTRIC MOTOR
HOMEMADE 12" BELT CONVEYOR WITH BELT RUNNING ON ALUMINUM TROUGH BELT SPEED 50 PER MINUTE
STACKED CALCIUM CHLORIDE BAGS
COARSE AGGREGATE FEED BELT
CALCIUM CHLORIDE SURGE HOPPER
70°
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5" x 16" VIBRATOR FEEDER
CALCIUM CHLORIDE CONVEYOR
2 HEAVY DUTY ELECTRIC VIBRATORS — ONE EACH SIDE
300 - 400 TON PER HOUR BARBER-GREENE PUGMILL DRIVEN BY 100 H.P. ELECTRIC MOTOR
FINE AGGREGATE FEED 30" BELT RUNNING 15 FT. PER MINUTE 5 H.P. ELECTRIC MOTOR
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24" FINE AGGREGATE BELT CONVEYOR RUNNING 300 FT. PER MINUTE
30" COARSE AGGREGATE BELT CONVEYOR RUNNING 300 FT. PER MINUTE
CALCIUM CHLORIDE CONVEYOR & FEEDER
GATE OPENING
100 TON BIN FINE AGGREGATE
EXISTING COARSE AGGREGATE STORAGE
150 TON CONC. SILO
WATER SUPPLY FROM RIVER
11°
20°
42" x 60" VIBRATOR FEEDER
10'

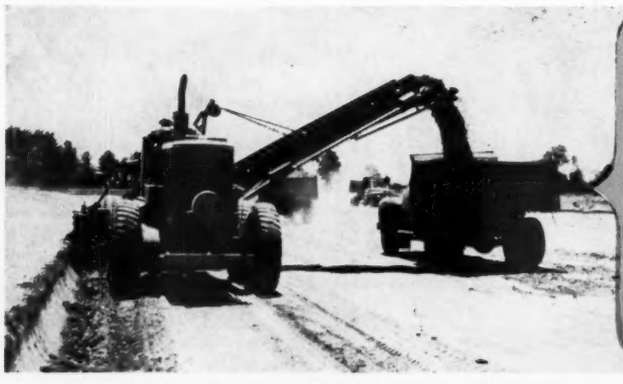
PLANT MIX GRADED AGGREGATES
American Limestone Company Plant

Graded aggregates and calcium chloride give mix even moisture and reduce aggregate segregation

A SIMPLE conveyor-fed pugmill mixed graded aggregates and calcium chloride to produce some top quality base-course material for a recently completed highway job near Jefferson City, Tenn.

Engineers of the Tennessee Department of Highways and Public Works used plant-mix methods with calcium chloride to obtain uniform moisture and to reduce aggregate segregation—vital factors in achieving maximum density.

The work was part of a project de-



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NOTE: 30 SECOND TRUCK LOADING TIME—45 SECOND TRUCK CYCLE

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GREATER BELT MATERIAL TRACTION

Troughing Belt — Greater capacity, Cleaner operation, and more elevator-to-truck clearence means plus production at the end of the day.

(Hinge carrier—Fast—Safe—Complete mobility. Standard equipment for 16'-19' and 22' carriers.)

FOR MORE INFORMATION, WRITE OR CALL YOUR LOCAL ADAMS DEALER OR THE REISSER CORPORATION

STABILITY—Extra heavy plow beam and lower carrier construction adds balance and safety for fast, continuous production.

SERVICE — Standerization of parts — Simplicity of construction, guarantees fast immediate, service at your local dealer.

36" & 42" troughing belt ELEGRADERS for all ADAMS 550, 610, 660 Motor Graders. Carrier lengths 16' 19' & 22'. All carrier lengths interchangeable with 3' extensions.

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INDUSTRIAL MACHINERY
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NEWCO* WIRE ROPE CLAMP & THIMBLE
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- . . . gives holding efficiency of 95 to 100%.
- . . . will not collapse.
- . . . no shearing of bolts.

BEARING SERVICE is many times heavier; for example, the ⅜" Newco has a ½" bearing surface! Carries a heavier load, and the original cost is easily absorbed by savings on labor and longer life. In 12 sizes.

⅜" to 1" size STEEL CLAMPS (Approx. 80,000 PSI's)
⅛" to 5/16" MANGANESE BRONZE (Approx. 110,000 PSI's)

See your distributor or write direct to

NEWMAN MFG. & SALES CO.
Dept. 104, Box 5939, Kansas City 11, Mo.

signed to modernize U. S. 11E east and west of Jefferson City. A $600,000 contract calling for the paving of an 11.7-mile stretch of two-lane roadway west of the city was awarded to Knoxville Construction Co., Knoxville, Tenn. Work started early last summer and was completed this spring. The job required 157,000 tons of plant-mix base, topped with two courses of bituminous concrete.

A second contract totaling $385,000, also awarded to Knoxville Construction Co., called for paving four lanes of divided highway on a new 3-mile relocation of U. S. 11E east of the city. This work began early this year and was completed this summer. About 76,000 tons of base were required.

Stabilized Base

Pavement design is similar in both contracts. The 14-inch-thick base consists of dense and graded crushed stone, stabilized with calcium chloride. A bituminous prime coat separates the base from the binder course of bituminous concrete, laid 250 pounds per square yard, and the surface course of bituminous concrete, laid 125 pounds per square yard. The roadway width is 24 feet, and base width, 26 feet. Shoulders are 10 feet wide and slope 1 inch per foot.

Plant-Mixing

All of the base-course material was plant-mixed by the American Limestone Co. at its Holston quarry in Mascot, Tenn. A continuous-flow all-electric operation was used throughout to reduce both labor and equipment.

Fine aggregate was hauled by truck from a stockpile and dumped into a 100-ton bin. A heavy-duty vibrator on each side of the bin kept the material moving from the bin to a 30-inch-wide feeder belt underneath. A 5-hp electric motor ran the 10-foot-long belt at 15 fpm. The fine aggregate was dropped from the feeder belt to a 24-inch inclined belt conveyor and carried up to the pugmill.

Coarse aggregate was moved by a 42 x 60-inch vibrating feeder from a permanent storage silo to a 30-inch inclined belt conveyor which also terminated over the pugmill. The fine-aggregate conveyor was powered by a 10-hp electric motor and the coarse-aggregate conveyor by a 20-hp conveyor. Both traveled at a speed of 300 fpm.

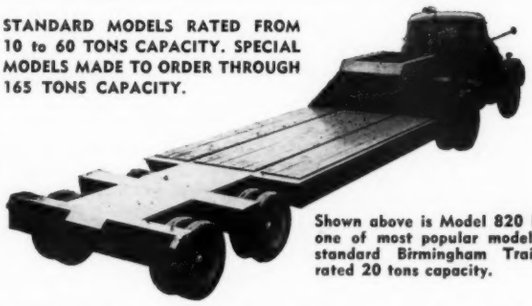
Calcium chloride was emptied from bags by hand over a 12-inch

(Continued on next page)

One of the Jaeger spreaders lays a 5-inch uncompacted lift of the plant-mix material. Working in adjacent lanes, two of these machines laid up to 4,700 tons of material in a 10-hour day.

Birmingham Heavy Duty Trailers

STANDARD MODELS RATED FROM 10 to 60 TONS CAPACITY. SPECIAL MODELS MADE TO ORDER THROUGH 165 TONS CAPACITY.



Shown above is Model 820 FLR, one of most popular models of standard Birmingham Trailers, rated 20 tons capacity.

Model 820 FLR shown above fills the need of 99 percent of all haulers. It has tandem axles, is light weight (9,000 lbs.) and gives you maximum payload. It has proved to be a most popular model.

The Birmingham Rocker Beams are fabricated in box sections and are mounted on 4 Brass Bushings, 4" diameter by 6" length. These are greatly oversized for the loads. The bushing assemblies are completely enclosed at one end. The position of the alemite fitting in the closed end feeds the grease out and prevents road dust and grit from damaging the bushing. Frames are electrically welded open-hearth steel shapes. Decks are oak, surfaced to 2¾" thickness. Axles by Standard Forge and Axle Company have Timken bearings. Bendix Westinghouse airbrakes. Full I.C.C. lighting and directional signals.

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APPROVED for 1-course MACADAM RUNWAY HIGHWAY CONSTRUCTION

The Vibro-Tamper applies vibration *and* impact, gives up to 95 proctor in 2 to 3 passes. Approved by many states and Army, Navy and CAA for 1-course construction.

In waterbound work, Vibro-Tamper "runs in" screenings in as few as 2 passes—saving 50% time on spreading, brooming, and rolling.

WRITE FOR VIBRO-TAMPER BULLETIN FOR COST-SAVING DETAILS

THE INTERNATIONAL VIBRATION COMPANY

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Wherever you work

Specify air-entrained

Concrete made with

Darex AEA

DAREX AEA helps you meet specifications, helps you pour to the nail. Not a by-product, it is specifically formulated to give you CLOSE CONTROL of air content. In any climate, concrete made with DAREX AEA places easier, finishes faster and better, has finer texture, is more durable. DAREX AEA is the world's most widely used brand of air entraining agent.

Construction Specialties Division

DEWEY and ALMY Chemical Company

Cambridge 40, Mass.

Offices or Subsidiaries in principal U. S. cities and in Buenos Aires, Copenhagen, London, Melbourne, Milan, Montevideo, Montreal, Naples, Paris, São Paulo, Tokyo.

DARASEAL concrete curing compound • **DARACONE** masonry water repellent • **DARALITE** for lightweight aggregate

Bituminous concrete for surfacing courses, mixed in this Warren asphalt plant, is loaded under the batcher and raised over the pugmill, which was set on a separate frame so that trucks could load without driving into a pit.

C&E Staff Photo

(Continued from preceding page)

belt conveyor. The material traveled up to a surge hopper where a 5 x 16-inch vibrating feeder added the required amount of material to the coarse aggregate belt. The finished plant-mix contained about five pounds of calcium chloride per ton of mixture.

Pugmill

The Barber-Greene pugmill, rated at 300 to 400 tph, was about 8 feet long, 3 feet deep, and 5 feet wide. Twin shafts with reversible and replaceable paddle arms and powered by a 100-hp electric motor continuously mixed the flowing material and moved it over a dam gate into a hydraulically controlled 5-ton surge hopper. Spraybars, criss-crossed over the pugmill, added about 7 per cent by weight of water pumped from a nearby river.

The major part of the operation was controlled by one man who worked a push-button panel mounted on a platform next to the pugmill. Because the speed of the pugmill and the conveyors was calibrated to produce the proper mix, it was important for this operator to make sure that all materials were flowing at the desired rate.

Dump trucks loaded under the hopper and hauled about 15 miles to the site. About 75 trucks were required. At the site, two Jaeger spreaders worked together in adjacent lanes to lay 5-inch uncompacted lifts over the full roadway width. Production hit as high as 4,700 tons in a 10-hour day.

Right behind the spreaders were two Bros Wobble-Wheel rollers, pulled by an International rubber-tired tractor, which compacted the 5-inch lifts to about 3½ inches. Four lifts were required to build up the 14-inch base.

A Galion 10-ton steel-wheel roller followed. Final shaping was done with an Austin-Western grader. Because of the moisture-retention property of calcium chloride, no water had to be added during compaction.

The average gradation of the stabilized base-course mix was:

Sieve Size	Per Cent Passing
2-inch	<100>
1-inch	75-90
½-inch	60-75
No. 4	45-60
No. 40	15-30
No. 200	Not less than 5 per cent and not more than ⅔ per cent passing No. 40.

Bituminous Surfacing

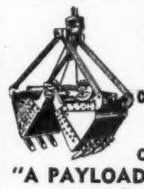
Bituminous concrete was made in a Warren portable plant having a capacity of 85 tph. Sand and crushed limestone stockpiles fed a 26-inch belt conveyor in a reclaiming tunnel. The aggregates were picked up by a bucket elevator and dropped into a

Always within easy reach . . **Hyatt's New Line of Dual-Purpose, Self-Aligning BARREL BEARINGS!**

Got a bearing problem? Just reach for Hyatt's new Barrel Bearing Catalog! This is one catalog engineers have been waiting for, because it's essentially *a guide to lower maintenance costs!* Barrel Bearings are not only dual-purpose in design; they're also *self-aligning*. They operate with full efficiency under misalignment conditions which cause excessive wear in ordinary bearings. If *your* job involves bearing specifications, make sure you have Hyatt Catalog No. B-154. It puts a complete line of Barrel Bearings right at your finger tips. Write to Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT

STRAIGHT ROLLER BARREL ROLLER TAPER ROLLER



KIESLER Since 1892

2-LEVER ARM CLAM SHELL BUCKETS with POWER ON BOTH SHELLS

"A PAYLOAD EVERY TRIP"

The ONLY Bucket that DIGS-IN instead of Lifting-Out.

Write for literature.

JOS. F. KIESLER COMPANY

934 W. HURON ST. CHICAGO 22, ILL.

48-inch dryer. The hot material was then raised up by a closed-bucket elevator, fed onto screens, and separated into hoppers.

From this point on, the Warren plant differed considerably from conventional plants. Instead of the pugmill being under the bins and batcher, it was set high on a separate frame so that trucks could be loaded without driving into a deep pit. The key to the operation was a cable-hoisted skip which was loaded under the batcher, raised up over the pugmill, and dumped automatically. In fact, the entire operation was automatic except for emptying the mixed blacktop into the trucks.

Asphalt was supplied from Esso Standard Oil Co. and was stored in two 10,000-gallon tanks jacketed with steam coils. Fuel oil for the dryer and the steam boiler was stored in an 18,000-gallon tank. Mechanical power was supplied by four General Motors diesels, and electric power, by a Caterpillar diesel-electric set. Washing equipment removed dust from the dryer and the screens.

Bituminous concrete was spread by a pair of Barber-Greene finishers and rolled by Buffalo-Springfield 10-ton rollers.

Personnel

L. R. Hall was general superintendent for Knoxville Construction Co., of which W. W. Price is president and general manager. R. L. Iddins is division construction engineer for the Tennessee Department of Highways and Public Works, which is headed by H. M. Bates, state highway engineer. THE END

Modern Construction Is Shown in New Film

New developments in constructing highways, buildings, bridges, tunnels, canals, and pipelines are shown in the sound-color film, "The Builders". Nontechnical for the most part, the 31-minute picture deals with the part played by welded wire fabric in modern construction.

The movie was produced by Industrial Motion Pictures, Inc., and sponsored by the Wire Reinforcement Institute, Inc., Washington, D. C., an association of manufacturers of welded wire fabric used for concrete reinforcing. The film is available without charge—except for transportation—from Modern Talking Picture Service, Inc., 45 Rockefeller Plaza, New York, N. Y.

Tire-Mounted Excavators

■ A new catalog illustrating the Lorain 42 Series of rubber-tire-mounted excavator-cranes has just been released by the Thew Shovel Co., 28th and Fulton Rd., Lorain, Ohio.

A section is devoted to each of the Moto-Shovel, Moto-Hoe, Moto-Clamshell, and Moto-Dragline units, with another section giving special emphasis to the crane boom and its equipment. The latter includes views and descriptions of the precision power load-lowering device, boom-lowering device, third drum, three-sheave boom head, and many other features.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 124.

New Welding Electrode

■ A new high-speed welding electrode for horizontal and down-hand welding has been announced by Hobart Bros. Co., Dept. RE, Troy, Ohio. Best suited for fast welding on mild and medium carbon steel, the Rocket No. 24 electrode is recommended for welding operations on machinery, low-pressure storage tanks, and light structural materials which require AWS Classes E6012 and E6020 electrodes.

According to the manufacturer, this contact-type electrode has a high deposition rate and produces a high quality weld with a finely rippled bead approaching the appearance of a submerged arc weld. Spatter loss is reported to be exceptionally low, and the slag is easily removed by a light tap.

For further information write to the company, or use the Request Card at page 18. Circle No. 34.

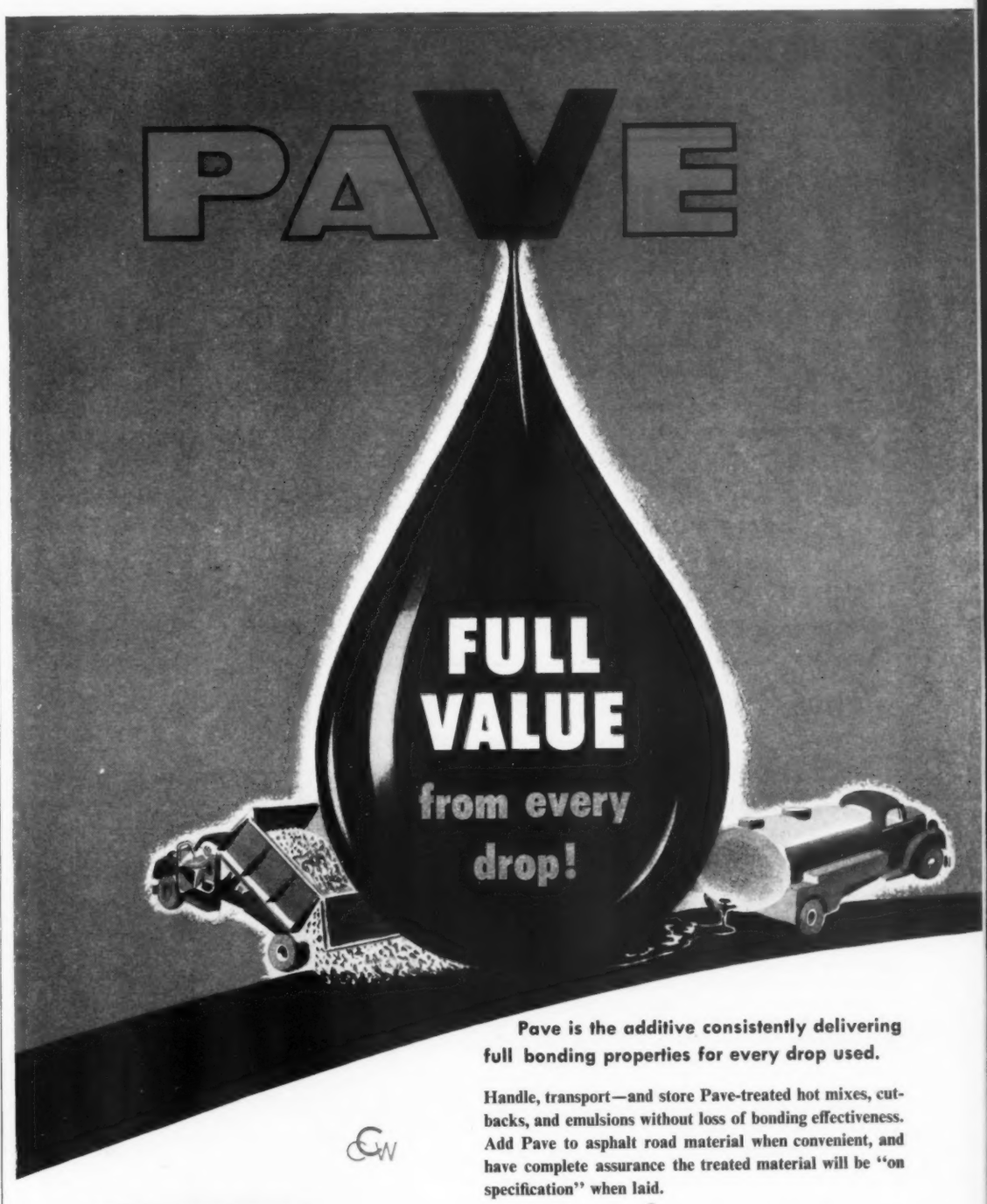
Booklet on Tractor-Loader

■ A catalog on its new Model 20 Shoveloader, a rubber-tired tractor-loader with a standard bucket capacity of 12 cubic feet, is available from the Baker-Lull Corp., 314 W. 90th St., Minneapolis 20, Minn.

Designed for handling sand and other dry materials, the Model 20 has a unit-type power train including engine, transmission, and drive axle. This helps reduce the original purchase price and simplifies maintenance.

Extra accessories such as lift forks, a special narrow bucket, solid tires, and a crane hook are available.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 99.



Pave is the additive consistently delivering full bonding properties for every drop used.

Handle, transport—and store Pave-treated hot mixes, cutbacks, and emulsions without loss of bonding effectiveness. Add Pave to asphalt road material when convenient, and have complete assurance the treated material will be "on specification" when laid.

Less additive is needed for any job with Pave because of its highly concentrated, easy to handle form. To lay improved roads and patches economically, specify Pave as your additive.

PAVE —HEAT-STABLE

For your copy of the new Pave brochure, write . . .

Carlisle Chemical Works, Inc.

Reading, Ohio

manufacturers of fine industrial chemicals

Small Diesel Engine

■ A small air-cooled diesel engine is announced by the Petter Diesel Engine Division, Brush Aboe, Inc., 350 Fifth Ave., New York, N. Y.

The Petter Model PAZ1 engine is a single-cylinder four-cycle air-cooled diesel unit that develops 2½ hp at a 1,500 rpm continuous rating. The engine has a bore and stroke of 3 inches, a BMEP of 62 psi, and a maximum mean piston speed of 750 fpm. It weighs 260 pounds.

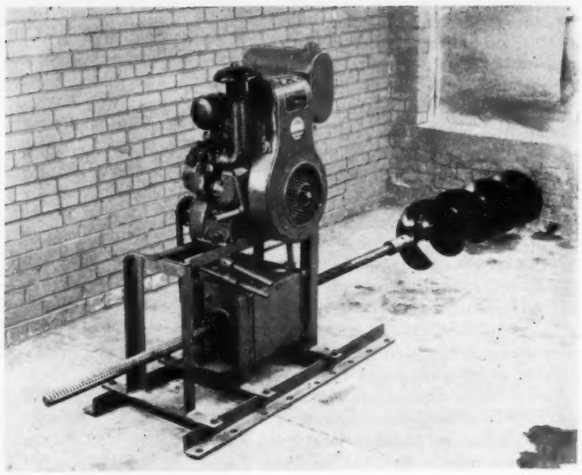
For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 90.

Fleet of SWENSON-Equipped Trucks Speed Blacktop Jobs

Contractors save money with Swenson Spreaders. Write for information.

Swenson Spreader & Mfg. Co.

Lindenwood, Illinois



The Prewitt horizontal digger.

Horizontal Digger

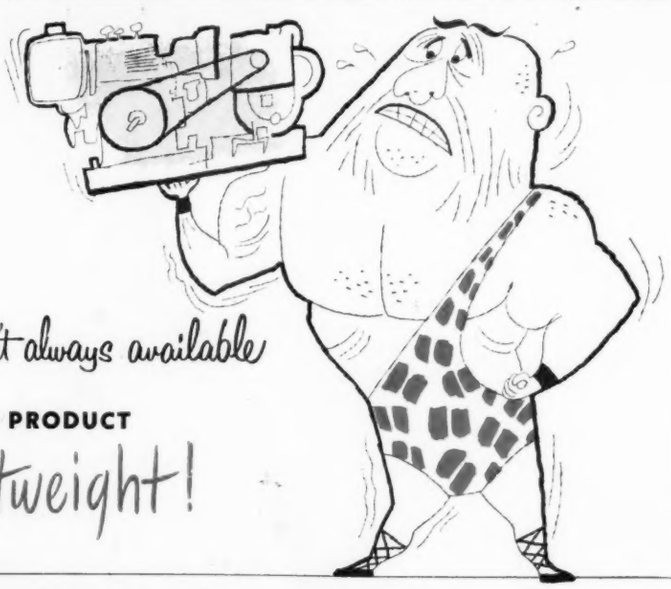
■ A new heavy-duty horizontal digger has been developed by J. R. Prewitt & Sons, Pleasant Hill, Mo. The new one-man-operated machine is recommended for drilling in embankments, under highways and sidewalks, and under railroad beds and building foundations, as well as in laying mains and underground lines. It drills in clay, shale, soapstone, and many other types of soil.

A force-fed feed screw provides steady pressure which forces the auger into the work.

The unit will drill up to 40 feet with a 10-inch-diameter auger, or to 48 feet with a 12-inch auger. Auger cutter heads are removable for sharpening or replacing.

Mounted on a skid, the digger is pinned to the ground with long spikes, thus providing a solid base for the force-fed drilling feature. The Prewitt digger is chain-driven and powered by a Wisconsin air-cooled gasoline engine of 5½ or 7½ hp. It includes a clutch and reduction gear assembly.

For further information write to the company, or use the Request Card at page 18. Circle No. 145.



weight lifters aren't always available

KEEP YOUR PRODUCT

Lightweight!

Power Products new industrial engine offers

60% *less engine weight*

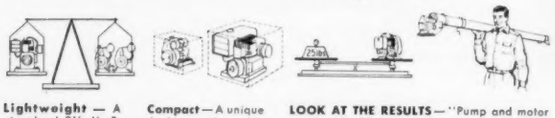
42% *less engine size*

NOW you can give your power equipment the Lightweight being demanded by all of industry. Power Products engines are not just a little lighter—they're 60% lighter than any currently available industrial engine of comparable horsepower . . . and that means greater portability for equipment. Wheels, carriages, etc., formerly necessary for portability, can be eliminated in many cases, allowing further streamlining and extra weight and cost savings.

Power Products engines are more compact in design — easy starting — offer sustained performance at high speeds and are easier to service than any other industrial engines. Yet they actually cost less!

If you want better acceptance — better performance for any industrial product that requires from 2 to 4 horsepower . . . switch to Power Products Lightweight!

LOOK AT THESE FEATURES



Lightweight — A standard 3½ H. P. industrial engine weighs as much as two and one half Power Products industrial engines of 3½ H. P.

Compact—A unique design makes this engine amazingly compact. A comparison of overall dimensions shows a saving of 72% in size over the standard engine.

LOOK AT THE RESULTS—"Pump and motor weigh only 25 lbs.," reports a leading pump manufacturer. This is typical of the kind of amazing lightweight products these engines make possible.

"Only 41 lbs., and usable anywhere, at any angle." Grain auger manufacturers are among the many who have found it possible to revolutionize their products with these engines.

POWER PRODUCTS CORPORATION

Grafton, Wisconsin

Gentlemen:

I know what important advantages weight saving can give my products. Please send me full information on these new engines.

Name.....

Company.....

Address..... State.....

Steam Generator Unit For Pile-Driving

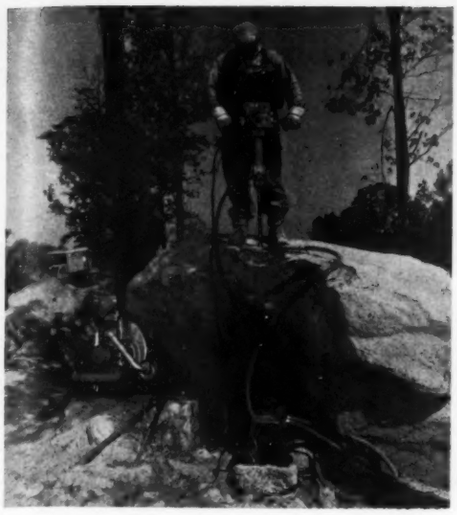
■ A steam generator built expressly for pile-driving service is described in a new bulletin prepared by the McKiernan-Terry Corp., Dept. 13, 15 Park Row, New York 38, N. Y. The bulletin includes complete specifications and over-all dimensions and an explanation of the generator's design and features.

A sectional drawing shows the forced-recirculation water system used. The center spread is arranged in question and answer form to concisely answer questions concerning the unit. The bulletin also includes job illustrations showing how contractors have set up the steam generator with various convenient mountings.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 125.

Flexible Road Joint News

The Flexible Road Joint Machine Co., Warren, Ohio, manufacturer of Flex-Plane concrete-finishing machinery, has appointed Russell Flemming manager of the parts and service department of the company.



The Bosch electric rock drill, available from the Homelite Corp., operates from a lightweight generator.

Electric Rock Drill

■ A new electric rock drill is now available from the Homelite Corp., 22 Riverdale Ave., Port Chester, N. Y. The Bosch drill is powered by a lightweight high-cycle motor requiring no brushes, and it is operated from a Homelite generator, weighing only 130 pounds, which can be carried. It is pointed out by the manufacturer that the use of the electric power source eliminates the need for big air compressors.

The rock drill, equipped with the Bosch pressure blower, drills blasting holes, wedge holes, and anchor holes in rock, concrete, or brickwork. It drills holes 18 feet deep, and is reported to operate with a minimum of vibration and noise.

The Homelite Corp. is the sole distributor in this country for the Bosch line which includes, in addition to the electric rock drill, a light-duty pavement breaker and a builder's hammer for such tasks as chipping, spading, vibrating, and nail driving. The builder's hammer is also available with a 115-volt universal motor which operates from standard house current.

For further information write to the company, or use the Request Card at page 18. Circle No. 32.

Building and Maintaining Calcium Chloride Roads

■ A new booklet describes in nontechnical language how gravel, crushed stone, and similar types of road surfaces can be converted to smooth dust-free riding surfaces, and easily maintained, through the use of calcium chloride.

Illustrated with many how-to-do-it photographs, the booklet covers such phases of the subject as: how to plan a calcium chloride road; how to convert roads lacking sufficient binder soil or aggregate; drainage, blading, and shaping; the application of calcium chloride; and seasonal maintenance. In addition, the booklet shows how the calcium chloride road fits into a program, since it is an intermediate type of pavement lying between the dusty unimproved road and the more expensive paved surface.

To obtain this literature write to the Solvay Process Division, Allied Chemical & Dye Corp., 61 Broadway, New York 6, N. Y., or use the Request Card that is bound in at page 18. Circle No. 27.

Universal Atlas Appoints

The assistant secretary of the Universal Atlas Cement Co., New York, N. Y., Edward D. Depew, has been elected secretary and appointed general attorney of the organization.

Mr. Depew has been with the U. S. Steel Corp. subsidiary since 1947. He became assistant secretary after working as an attorney specializing in labor matters.

get BIGGER PROFITS every day

MILLER *Tilt-Top* loading cuts time between jobs!

Time saved between jobs means more profit on every job. Where large flat bed trailers are usually too cumbersome for fast jump hauling . . . a MILLER Tilt-Top is always handy for moving dozers, tractors, etc. Self-movers practically load themselves onto tilted platform and can be towed to the next job in jig time . . . cutting nonproductive time for operator and equipment to a minimum. Standard oak platform is 8′ x 14′, optional 16′ available.

SEE YOUR DEALER OR WRITE

MODEL "B" 10 TON $1175.*

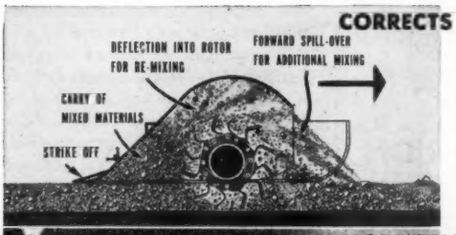
The following equipment is optional and extra: hydraulic tilt control, two-speed winch, electric brakes.

* *Plus freight and Federal Tax.*

MILLER research engineers

456 S. 92nd Street, Milwaukee, Wis.

WHY YOU NEED A SEAMAN PULVI-MIXER FOR ALL YOUR MIXING....



CORRECTS AGGREGATE SEGREGATION

The unstable separation of coarse and fines *always* present when aggregates are transported, moved or pushed, is blended to absolute homogeneity. Coarse stone is keyed and inter-locked, voids are uniformly filled with fines.

MORE THOROUGHLY AND MORE COMPLETELY MIXES ANY BINDER WITH ANY MATERIAL

Any fluid of any viscosity, any granular material from cement to rock salt is evenly blended and dispersed to full depth. No "lean" or rich spots in bituminous mixing. Checks fluid binder migration or water evaporation.

HIGHER DAILY OUTPUT AT THE LOWEST COST

Mixing a mile a day of 21 foot roadway is average in bituminous construction and soil-cement; and even more in chloride, lime, gravel or sand clay stabilization. One man operation.

SUPERIOR FOR RECONSTRUCTION OF OLD BASE

Simply scarify and shape to new grade old bituminous, gravel or sand clay base, use the PULVI-MIXER to pulverize and re-mix with new binder, added if needed.

MIX IS READY FOR IMMEDIATE COMPACTION

PULVI-MIXER holds the treatment to fine grade and crown previously established by the blades. Mix is level, smooth and partially compacted ready for rolling. No finish blading needed. Final compaction attains much higher density.

NEW BULLETIN completely describes SEAMAN Self-Propelled TRAV-L-PLANT and Self-Propelled PULVI-MIXER. Details processing information. Illustrates many field scenes. Send a postcard for Bulletin T.P.S.

SEAMAN MOTORS Inc.

282 NORTH 25TH ST.
MILWAUKEE, WISCONSIN

Small force uses duplicating machine and special forms to prepare checks and records at job site as

Big Payroll Is Handled Easily in Field Office

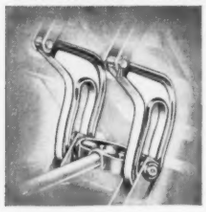
No job is too tough for a

Pick a MARION BODY and HOIST for *Always Sure* Dependability

You'll find every Marion Body and Hoist is . . . tougher . . . better performing . . . and more dependable . . . regardless of dumping and hauling conditions. Whether your requirements call for a standard or special body and hoist to meet individual problems, Marion's "Designed on the Job" models will do the work more efficiently and economically and will last longer.

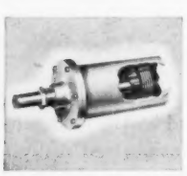
Why not see your nearby Marion Distributor for more in-the-field proof . . . or write direct . . . today.

HERE'S WHY MARION HOISTS . . . LAST LONGER . . . GIVE BETTER PERFORMANCE . . . ARE MORE DEPENDABLE AND ECONOMICAL TO OPERATE.



The secret is in the double equalizing lift arms. By carefully designing the curved lift arm tract to the circular path of the rollers, Marion engineers have succeeded in accomplishing outstanding performance. The hoist starts at extremely low oil pressures and continues to lift smoothly without fluctuation or pressure surges even when the loads are retained in the body such as in spreading.

Marion pumps are built to last. Meehanite housing is used with case-hardened gears and shafts. Four anti-friction needle bearings assure smooth performance. Patented valve gives positive control for spreading . . . check eliminates back pressure. Valve action is progressive—raise, hold and lower.



Cylinders are made of seamless steel tubing bored and finished to a glass-like smoothness. There is a bolted leak-proof head. Piston has four iron Graflox-treated quick break-in rings — one ring per groove.

Hoist sub-frame is designed to give increased strength with a minimum of weight. Rear of the frame is enclosed. The point of support at base of cylinder is designed to withstand excessive horizontal and vertical stress.

"Designed on the Job"

MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO., MARION, OHIO, U. S. A.

A complete line of standard and special hydraulic hoists & dump bodies to fit every need

MAKING UP PAYROLLS in the field office is not a difficult task when time-saving equipment and methods are used. A good example is the Ditto system used by Farnsworth & Chambers Co., Inc., Houston, Texas, on a building project in Mississippi. Here the complete payroll—including checks, employees' record of earnings, and extra copies of the payroll—was prepared each week by two employees who also handled many other items of business.

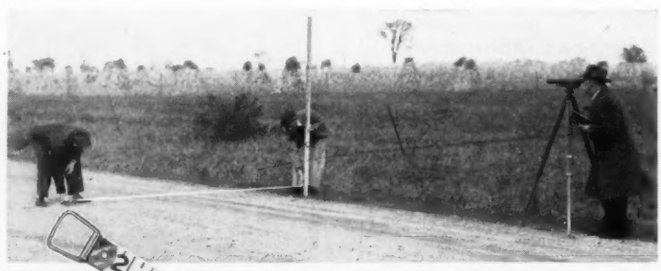
When a job is located at great distances from the home office, there is a considerable saving in time if the payroll is handled on the job site. Time lost in mailing the time reports in and the checks back is eliminated. This makes it possible to bring payday closer to the end of the work week, which seems to have a favorable effect on employee morale. These and other advantages easily outweigh the slight additional cost, if any, of preparing payrolls in the field.

Use Special Forms

Using the Ditto method, the only special equipment required in the field office is the Ditto duplicating machine, which is relatively inexpensive and can be used for many other duplicating operations. It is the use of several Dittoforms which makes the operation simple enough for convenient field use. These forms include the Weekly Payroll Master Sheet, Weekly Payroll duplicates, Analyslips for Employee's Record of Earnings, and Payroll Checks. Both the Analyslips and Payroll Checks are bound in groups of 15.

The Weekly Payroll Master Sheet is first prepared either on a typewriter with a special Ditto carbon or by hand with a Ditto pencil. This master sheet has a column for hours worked each day of the week, with separate spaces for straight time and overtime. Columns are provided for total hours, rate of pay, straight and overtime pay, and gross pay. This much information takes approximately the left half of the sheet. On the right half of the sheet, columns are provided for the following information: deductions, net pay, name and classification of employee, badge number, date, and check number.

On each payroll sheet, lines are provided on which to enter the foregoing information for 15 employees. Space is provided at the bottom of the sheet for totals. The top of the



The Non-Metallic Woven Tape that resists abrasion, moisture and hard use longest

LUFKIN HI-LINE

The new Lufkin Hi-Line is designed in every way for longest wear. The tough new miracle synthetic fibres used in the line are dimensionally stable — even after repeated soakings. A specially compounded plastic coating that resists abrasion, cracking, mildew, moisture and temperature changes protects the bold, easy-to-read markings. The case is of hand-stitched genuine leather, which lasts longer according to field tests!

287

BUY LUFKIN

TAPES • RULES • PRECISION TOOLS
FROM YOUR SUPPLY HOUSE

THE LUFKIN RULE COMPANY
SAGINAW, MICHIGAN
132-138 Lafayette St.
New York City • Barrie, Ont.

J. Chaisson, purchasing agent, and Mrs. Dona Baumgarner, stenographer, prepare the weekly payroll for Farnsworth & Chambers Co.'s large crew working on the University of Mississippi Medical School and Teaching Hospital at Jackson, Miss. *C&E Staff Photo*

sheet carries such information as the contractor's name, location and name of the project, payroll number, sheet number, date, and checker's signature.

At the close of the work week, each employee's hours are entered from the weekly time card or timekeeper's records. Necessary computations are made, and entries are made in each column of the master sheet. The sheet is then placed in the Ditto machine and all the information on it is transferred to the reproducing surface of the machine. The remainder of the job is a mechanical operation. Duplicate copies of the complete payroll are made by running through as many payroll duplicate sheets as are desired.

Payroll Checks

Checks are bound in groups of 15 in such a way that they overlap each other, leaving about a half inch of the bottom of each check exposed. The assembly is lined up so that this space on each check corresponds with the spacing of the lines on the payroll sheet. Columns on the check form are headed Pay, To the Order of, Badge No., Date, and Check No. These columns correspond to the columns on the right side of the payroll master sheet.

The checks are bound securely together at the right-hand side to maintain the spacing. In a single operation, the group of 15 checks is run through the Ditto machine, and each check is imprinted with the required information. The amount of the check is then impressed on each check individually in a check writer. When signed by the proper authority, the check is ready for delivery to the employee.

Forms for Employee's Record of Earnings are bound together the same as the checks. These forms have columns for all information shown on the check as well as additional columns to the left to show gross pay and deductions. A single operation of the machine also produces these forms for 15 employees. When checks and the forms for employees' record of earnings are being run, the information on the master payroll sheet which is not required for these runs is simply covered with a piece of paper on the duplicating machine. Since payroll, check, and record of earnings are printed from the same original, there is no chance of errors in copying.

On the construction of the Medical School and Teaching Hospital for the University of Mississippi at Jackson, Miss., weekly payrolls were prepared for more than 200 workmen during peak periods, with an average for the job of around 150 men. These payrolls were prepared in the field office by B. J. Chaisson, who was purchasing agent for the job, and Mrs. Dona Baumgarner, who also handled all the stenographic work in the office. Two copies of the payroll were supplied to the company's home office and one copy was kept in the field office records.

On this job, Farnsworth & Chambers made use of another piece of equipment which proves invaluable in the field office. This machine is the Autostat, a small photocopying machine. Examples of its use on this project included making copies for the home office of all correspondence received, producing copies of change orders, and making copies of monthly estimates. Any number of copies can be produced through this machine without destroying the original. The machine is very compact and occupies so little space that it can easily be used in any field office.

THE END

Army Finance Center Building, Fort Benjamin Harrison, Indianapolis, Indiana. Contractors: Sherry-Richards Co., Corbetta Const. Co., Inc., Willcox Const. Co., Inc., James McHugh Const. Co.

1400 Sets Symons Column Clamps Used on Job

Symons Column Clamps are simple in construction—only two units; both alike and no loose parts. They are completely adjustable and simple to apply—require only a hammer. Columns are squared automatically and accurately. Available in standard sizes 36, 48 and 60-inch. Also special sizes up to 84 inches.

To aid you in the erection of column forms send for your FREE copy of Symons Concrete Forming Tables. Symons Clamp & Mfg. Co., 4251-H4 Diversey Ave., Chicago 39, Illinois.

VACU-LUG *means*

LOW *maintenance cost!*

TOP QUALITY *performance!*

RELUG WITH VACU-LUG!

Vacu-Lug, the miracle process for renewing traction on worn tires, cuts tire maintenance in half. Yes, you save over half the cost of new tires, regardless of size when your worn ones are relugged by the famous Vacu-Lug Process.

Here is a proven method of traction restoration — tested and approved by U. S. Agr. Dept., laboratories, contractors, and municipalities. These new lugs are applied individually from crude rubber stock and are vulcanized to the tire in a huge steam chamber. What's more important, there is a shop near you ready to give instant service — to reduce down-time to a minimum.

Write for name of Vacu-Lug Shop nearest you.

VACU-LUG PROCESS — ON THE FARM — OFF THE ROAD — *Turns the Earth*

Tears and breaks in the casing can be repaired at the same time the tires are being relugged. All repair and relugging work are completely guaranteed. Renew power loss — get Vacu-Lug now!

AMERICAN TIRE MACHINERY, INC.
MUNCIE, INDIANA

drilling for the highways of tomorrow

When it's better to be safe than sorry, engineers investigate underground conditions. And, that's exactly what this Acker TH drill is doing — drilling test holes over a walled-up section of the old Erie Canal preparatory to building an overhead express highway.

For low-cost, dependable sub-soil information, try an Acker on your next job. Several models available with power and type of mounting to best serve your requirements.

Write today for prices and Bulletin 30, C&E.

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

A new angling bulldozer for the John Deere Model 40 crawler tractor.

New Angling Bulldozer

■ A new angling bulldozer for use with the John Deere 40 crawler tractor is available. Heavy construction of the blade and frame gives the No. 61 bulldozer adequate strength for numerous dozing jobs including dirt moving, land clearing, road grading, snow clearing, filling, and ditching.

The replaceable cutting edge of the bulldozer is of ½-inch hardened steel. The blade and the moldboard are curved to form a smooth contour that rolls the dirt instead of pushing it.

The blade can be angled 11½ and 25 degrees to the right or left, or it may be used straight. Angling the blade is accomplished by changing two bolts.

For further information write to John Deere, Moline, Ill., or use the Request Card at page 18. Circle No. 33.

Safety Note—A worker always should face the ladder and hold on with both hands. He should carry his tools in his pockets or have them hoisted with a rope or bucket.

Melting Furnaces for Sewer Compound

■ A line of compound-melting furnaces is available from the Hauck Mfg. Co., 126 10th St., Brooklyn, N. Y. Furnished with removable and replaceable steel melting pots, the furnaces can be supplied with kerosene burners or equipped with a burner for liquid petroleum gas, propane, butane, or bottled gas. Models are available in capacities of 4, 10, 15, and 25 gallons.

Any of these furnaces, according to the manufacturer, will melt a pot of compound, starting from cold, in 18 minutes. They are widely used for melting and heating all kinds of sewer and electrical pipe compounds, as well as gas main, water main, and protective enamel coatings such as Mineralead, Hydro-tite, G. K., Leadite, Brondo, Haymanite, Sewer Seal, asphalt, pitch, and tar.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 146.

The Hauck No. 47-P compound melting furnace with a tank of L. P. gas.

Sales Changes Are Made by Harnischfeger Corp.

A promotion and the establishment of two new offices are among changes made in the sales organization of Harnischfeger Corp., Milwaukee, Wis. Phil Petry, with the company for almost 13 years in various sales positions, is the new district manager of the Boston territory. He will direct sales activities in the area for P&H power shovels, truck cranes, overhead cranes, electric hoists, and soil stabilizers.

A new sales office in the Peter Stuyvesant Hotel building, Buffalo, N. Y., will cover New York state, and another office at 1821 NBC Building, Cleveland, Ohio, will serve that area. Paul Anderson will handle P&H hoist and crane sales, and A. B. Connor, excavator sales, from the Buffalo office. G. W. Bowman is in charge of the Cleveland office.

Arch James is in charge of the St. Louis office, and he will also work in the Kansas City territory. John T. Vaughan, who has just joined the company, will assist District Manager C. Powell in excavator sales in the Kansas City area.

Frank J. Hirner, new district manager of excavator sales for the Chicago-Milwaukee offices, will direct sales of P&H excavators from the Chicago office at 22 N. Wacker Drive.

2 ways to make crane operations pay more

1 RUD-o-MATIC
Combination Magnet Reel-Tagline

Rud-o-Matic Combination Magnet Reel-Tagline saves expensive electric cable wear on overhead and boom crane jobs. Tension on the steel tagline cable keeps the strain from the expensive electric magnet cable. Now standard equipment with major crane manufacturers, the Rud-o-Matic Combination Magnet Reel-Tagline is made in five models to fit your present equipment. Insure complete tagline control on *your* crane with Rud-o-Matic!

2 RUD-o-MATIC
Tagline

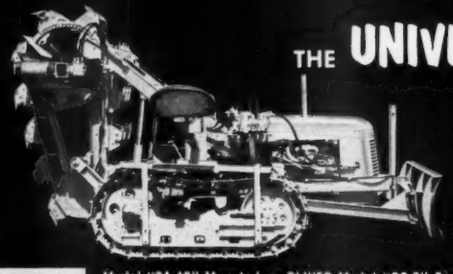
Crane operations are more profitable when you install Rud-o-Matic Taglines. Heavy duty torsion coil spring keeps tension on tagline cable at all times for bucket control. Buckets are held steady at any angle of the boom. Available in 11 models for various bucket sizes and pull out requirements. Taglines delivered fully equipped with fairlead and cable attached—ready to install. Get more pay loads per day with *your* crane with Rud-o-Matic Tagline Control!

For full information on Rud-o-Matic Taglines, call or write—

McCAFFREY-RUDDOCK
TAGLINE CORP.
2131 E. 25th St. • Los Angeles 11, Calif.

especially designed for your **"UTILITY TRENCHING"**

THE **UNIVERSAL TRENCHER**



HOLDS LINE AND GRADE WITHOUT EFFORT

SWITCHES DIRT INSTANTLY TO EITHER SIDE

CROSS TRENCHES... SQUARE TRENCHES

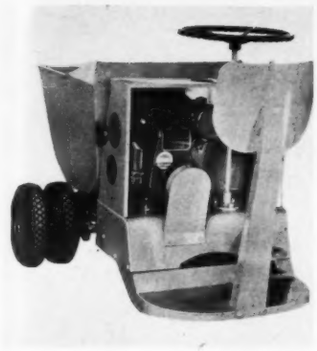
UNIVERSAL TRENCHER — OLIVER

Model "3A-48" Mounted on OLIVER Model "OC-3" Crawler Tractor

(14", 16" 18" WIDTH and to 48" DEPTH)

Send for our FREE FOLDER for your file . . . It outlines the many outstanding FEATURES and SPECIFICATIONS of the UNIVERSAL TRENCHER

HELLER ENGINEERING & MFG. CO. Trencher Division · 11750-A SO. ALAMEDA ST., LYNWOOD, CALIF.



Powered Wheelbarrow Gets Safety Device

■ An operator's guard and support is welded to the riding step of all new S-10 Moto-Bug powered wheelbarrows. This adds to operating safety by holding the operator upright in case of a sudden jolt which might throw him off the riding step.

The device is a steel upright post ending in a broad curved steel plate. It also serves as a back support which will reduce fatigue during extended operating periods.

For further information write to the Kwik-Mix Co., Sales Office, 3029 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 128.

Individually Powered Electric-Drive Wheels Are Equipment Feature

■ The land-clearing equipment, specialized cranes, and other new machinery now being manufactured by R. G. LeTourneau, Inc., Longview, Texas, are powered by a new electric control system in which each wheel is a drive wheel, having its own electric motor and gear reduction for driving power in either direction.

Each wheel is thus individually driven, steered, and braked, providing the machinery with greater traction and maneuverability than was possible before. All other operating components of LeTourneau equipment, such as booms and winches, are also driven by separate motors, with power provided for the entire machine by an engine-driven LeTourneau generator. The wheels and other powered parts are operated by switches on the dashboard.

Among equipment being manufactured by the company are a self-propelled tree saw and a land-clearing tractor; revolving cranes and jackknife cranes; the rubber-tired trackless multiunit LeTourneau train; and an off-shore drilling platform. The concern is also making electric hoists and jib cranes, electric motors, generators, and generating sets.

For further information write to the company, or use the Request Card at page 18. Circle No. 37.

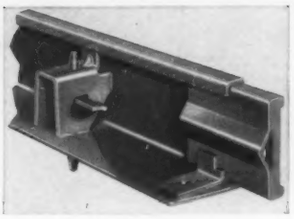
Stewart-Warner News

Thomas M. Murphy has been appointed manager of industrial sales of the Alemite Division of Stewart-Warner Corp., Chicago, Ill. He succeeds E. Ralph Harris, who has become a distributor of Alemite lubrication products and Stewart-Warner instruments in St. Louis, Mo.

Mr. Murphy has been with the company since 1947.

Heavy-Duty Road Form

■ A heavy-duty road form, known as Superform, is built of ¼-inch steel, and features a rigid box-type joint lock and box-type stake pockets welded to the base, face, and flange. Its locking plate, reinforced with a longitudinal V-rib and vertical end-bars, telescopes with the form sections to produce a rigid accurately aligned joint, and to give positive support to the outside edge of the top flange. The V-rib and end-bars also offer an unusually large hammering area that extends 3 inches from the face of the form and is reinforced.



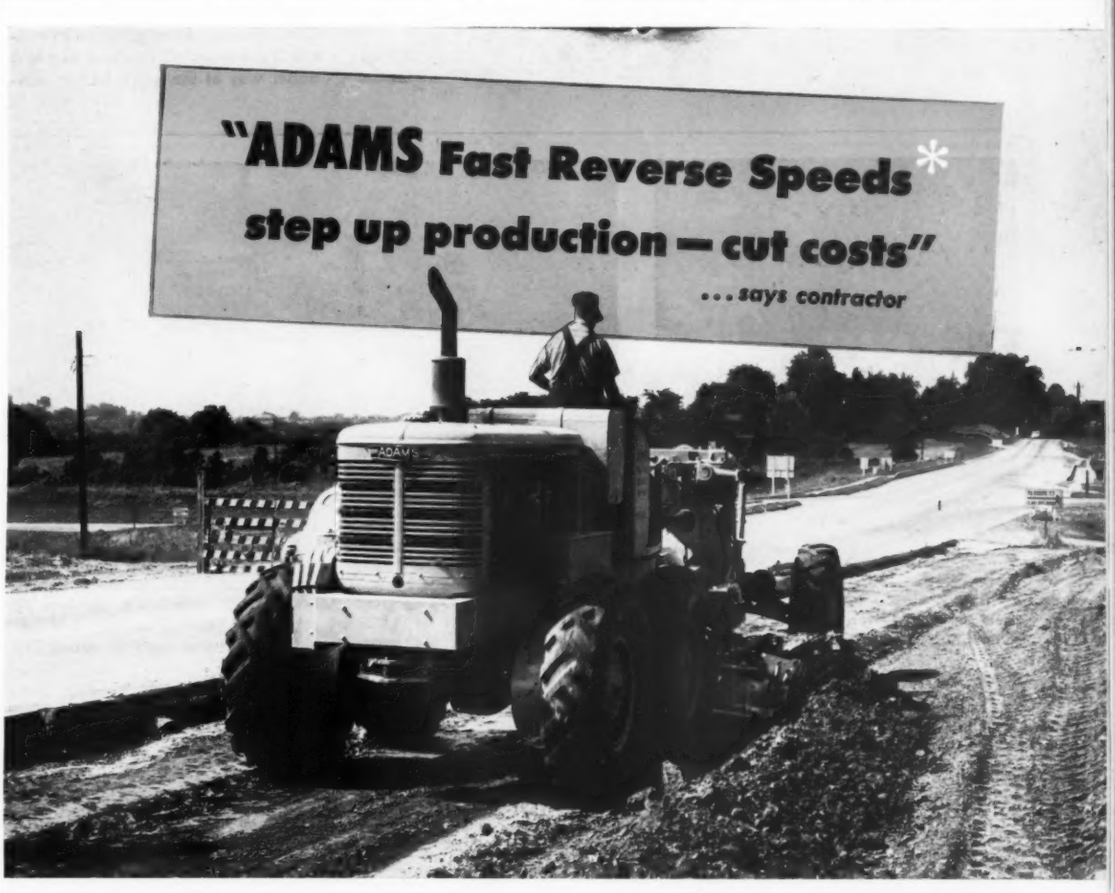
The rigidity of the form is also increased by welding the stake pockets to the base, face, and flange so as to give two-way bracing. Welding also permits mechanical form-stripping devices to be safely attached to the form pockets.

For further information write to the Super-Form Co., 30 E. Broad St., Columbus 15, Ohio, or use the Request Card at page 18. Circle No. 8.

American Steel & Wire Makes Two Promotions

Harold Christopher and Adolph A. Hirstius have been named manager and assistant manager, respectively, of the manufacturer's products department of American Steel & Wire Division of U. S. Steel Corp., Pittsburgh, Pa.

Prior to their promotions, Mr. Christopher was assistant manager and Mr. Hirstius, office manager of the department.



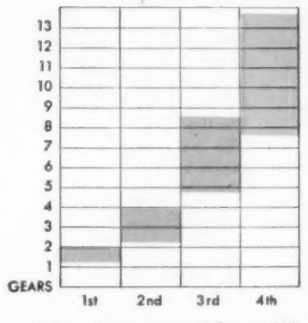
On many jobs—like the road-widening one shown above—it is faster, easier and cheaper to shuttle the motor grader on short stretches than to turn around at the end of each pass—if, that is, the machine is capable of backing at high speed.

The fast reverse speeds of Adams motor graders (up to 13½ mph.) is one of the reasons that Fred Weber, prominent Missouri contractor, likes his Adams above all others. He has this to say, "The fast reverse speeds of the Adams "660," plus its 140 hp. engine, power steering and powershift moldboard make it a fast and easy machine to work. Also, the extra-low creeper gears make it fine around culverts, intersections and tight places. No other motor grader compares with it."

For work requiring abundant power, fast forward and reverse speeds and positive, precision controls, no other grader compares with Adams. Ask your Adams dealer for a working demonstration.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, IND.

* Only Adams Has 4 Reverse Speeds



Adams 4 reverse speeds (up to 13½ mph.) save valuable time in shuttling back and forth on short stretches and in backing to buck snow drifts.

Make your next motor grader an ADAMS

A crane lifts heavy steel girders being used in construction of the ore-loading docks at Puerto Ordaz on the Orinoco River in central Venezuela. Extensive dredging operations in the river channel were necessary to make the port accessible to ocean-going vessels.

Varied Construction In Ore Mine Project

Huge fleet of earthmovers works on railroad and highway connecting mine and dock

CONSTRUCTION of mining facilities, a railroad, and loading docks, as well as extensive dredging, were major steps in the development of the Cerro Bolivar mining works in central Venezuela. Operations are now under way at the mine, said to contain the largest deposit of high-grade iron ore in the world.

The Bechtel International Corp., San Francisco, had the contract to serve as manager of construction on the huge project. The firm provided field engineering and operated all sources of supply, including warehousing and transportation. Morrison-Knudsen of Venezuela had the subcontract for construction of ore-gathering facilities at Puerto Ordaz, the shipping point on the Orinoco River.

The Cerro Bolivar mine, situated in a sparsely settled region south of the Orinoco River, was discovered in 1947 by the United States Steel Corp. After more than two years of exploratory drilling, surveying, and reconnaissance, plans were drawn for developing the mine. Actual construction was begun early in 1952, and completed this spring.

Railroad Link

One of the initial steps was the building of a 91-mile-long mining railroad from the mine site at Ciudad Piar to the river port at Puerto Ordaz. A highway to accommodate automobile and truck traffic was constructed parallel to the railroad.

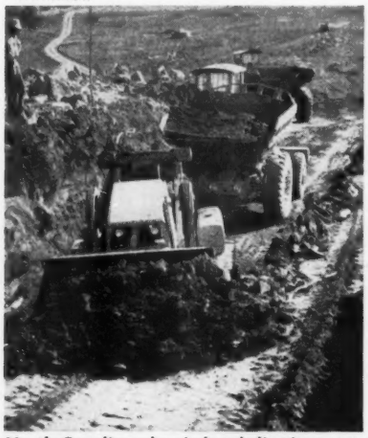
In construction of railroad marshaling yards and repair facilities at the mine site, more than 100 Caterpillar track-type tractors and motor graders were used. More than 50 Caterpillar diesel engines powered railroad ballast crushing plants, power shovels, and lighting equipment.

At Puerto Ordaz, a ship-loading dock was constructed, huge conveyor-type loaders were erected, and ore stockpile yards were prepared. A 12,000-kw steam turbine plant was built. Town sites to provide communities for the mine workers and their families were constructed at Puerto Ordaz and Ciudad Piar.

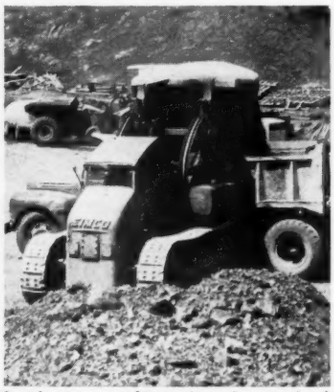
Dredging Operation

To enable ocean-going ore ships to come up the river to the loading point, it was necessary to dredge a deep-water channel through the delta land of the Orinoco. This 154-

Advertisement



North Carolina clay is hard digging, yet an Eimco 105 with an inexperienced operator loaded 153 trucks in its first 8 hour day on the job. A conventional front end loader in the same price category with the same bucket capacity and under identical conditions using an experienced operator was only able to load 75 trucks in the same length of time. You too, can get twice the production for the same capital outlay by buying an Eimco 105.



On the Waldo grade north of San Francisco an Eimco 105 is used in the tunnel to speed up mucking. As the top is broken out to make way for the huge steel supports muck runs down into the two pilot headings where only 15-20 minutes mucking time is required for approximately 75 yards per side. Fast, small trucks carry the muck out to stockpile where the same 105 loads into large trucks during drilling cycle.

Stockpile loading into trucks in Massachusetts. Eimco 105's load rock, sand, gravel, slag, brick, clay or any other material and two speed discharge makes it possible to fill large or small trucks. Independent track operation provides unlimited maneuverability, simple controls make handling easy. Write for more details to The Eimco Corporation, Salt Lake City, Utah.

B-69

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ROUND COLUMN FORMS
Sturdy • Straight • True
Since 1888—the standard in the construction industry...for lease only or, for lease-and-erection. Diameters; 12" to 56" and larger; any height. Two attractive capitals.
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DesLauriers Column Mould Co., Inc.
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Chicago • Detroit • Oakland

More than 100 pieces of earthmoving equipment were required to grade and otherwise prepare the Cerro Bolivar mine site and facilities. Here a Caterpillar D8 tractor with a bulldozer grades a road atop Bolivar Hill.

nautical-mile channel to the Atlantic will require continuous dredging if it is to remain navigable.

Cerro Bolivar (Bolivar Hill) is a mountain about six miles long and about 1,800 feet high. U. S. Steel Corp. officials estimate the rich ore content of the vein at more than 400 million tons. When operations are in full swing, about 10 million tons of ore will be extracted annually by the Orinoco Mining Co. and hauled to Puerto Ordaz for shipment.

An impressive ceremony marked shipment of the first load of ore this spring to the U. S. Steel Corp.'s Fairless Works plant at Morrisville, Pa. President Marcos Perez Jimenez of Venezuela presided and pressed a button which started loading of the Swedish ship, Tosca, for the initial voyage. THE END

Publications on Building Construction Are Listed

Sources of information valuable to contractors and others in construction are listed in "Selected Bibliography on Building Construction and Maintenance" published by the National Bureau of Standards. The booklet contains titles of papers dealing with the practical aspects of building construction, together with a number of publications more technical in nature.

This list includes publications which are available from the government, trade associations, and universities. Some of those listed can be obtained free of charge; others are for sale.

Also listed are a few of the standards relating to construction and maintenance issued by the American Standards Association and the American Society for Testing Materials, as well as some federal specifications. Among subjects covered are concrete, design loads, construction and construction materials, maintenance and modernization, safety codes, and steel.

Compiled by L. D. C. Nobel, the book contains 35 pages and costs 30 cents. It can be ordered from the Government Printing Office, Washington 25, D. C.

Wire Concrete-Form Tie Has Re-usable Ends

■ A wire concrete-form tie with ends that do not have to be thrown away is illustrated in literature from the Williams Form Engineering Corp., Madison and Garden Sts., Grand Rapids 7, Mich. The Williams Wedge-Lock wire tie consists of a re-usable outer unit and an inner unit, the only portion lost in the wall. A cone attached to the re-usable unit unscrews one inch back from the face of the wall. The inner unit is crimped to prevent turning and breaking of bond during the disconnecting.

The form tie is listed for wall widths 8 inches to 6 feet 2 inches.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 114.

DRILLING CONTRACTORS

Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures

Manufacturers, also, of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits.

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SPRAGUE & HENWOOD, INC.
Dept. C, Scranton 2, Pa.

The last word in Asphalt Pavers

THE
BLAW-KNOX BITUMINOUS PAVER!

On demonstration the performance of the Blaw-Knox Bituminous Paver has been little short of remarkable. The machine has laid between 150 tons and 200 tons an hour. It has unloaded a 20-ton truck in 2½ minutes. It has laid 140 ft. of 3½" course, 12-ft. wide in an hour.

You will be amazed at the smoothness and finish of the course that slips out like a ribbon behind it. Hand work is practically eliminated.

You will be impressed by the ease of handling and the simplicity with which extensions in width up to 13 ft. are made.

You will appreciate being free from the maintenance and rebuilding—characteristic of light crawlers. You will see something new in wheel mobility, ease and accuracy in steering, tire absorption of vibration caused by tamping, better compaction and reduced power consumption.

There is a new bulletin on the Blaw-Knox Bituminous Paver. Why not ask for it?

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1916 State Street
Nunda, New York

BLAW-KNOX *Bituminous Paver*

Drinking Fountain

■ A portable drinking fountain that holds four gallons of water is offered by Mink-Dayton, Inc., 117 N. Findlay St., Dayton 3, Ohio. The fountain operates on an automatic air-pressure principle, and water flows at the touch of a button. Paper cups can be eliminated.

A stainless-steel inner tank is insulated to keep the drinking water cool. The tank is easy to fill, snaps open and closed, and is carried by a shoulder strap.

For further information write to the company, or use the Request Card at page 18. Circle No. 129.

Catalog on Pocket-Size Technical Data Books

■ A new catalog of the Lefax pocket-size technical data books is off the press. Listing over 2,000 subjects on every known branch of engineering, it can be obtained without charge on request. Lefax pocket data books contain up-to-the-minute reference material helpful to engineers and construction men. The data is conveniently indexed for use right on the job.

Subjects covered include building construction, reinforced concrete, highway engineering, metals, lumber data, hydraulics, piping data, surveying tables, metallurgy, mechanical drawing, machinist's data, triglog tables, and many others.

To obtain this literature write to the Lefax Publishing Co., Sheridan Bldg., Philadelphia 7, Pa., or use the Request Card at page 18. Circle No. 56.

Portable Power Drive For Pipe Threading

■ Its portable power drive for threading, cutting, and reaming pipe with hand tools is now made with a new wrenchless Speed-Grip chuck, The Ridge Tool Co. of Elyria, Ohio, reports.

The chuck is said to operate on a different principle from conventional hammer chucks and holds any kind of pipe or rod securely in both forward and reverse rotation.

In operation, the grip-tooth jaws are closed on the work by a hand wheel and socked lightly. Then motor action holds the work even tighter.

The new Ridgid Model 400A power drive handles ⅛ to 2-inch pipe, ¼ to 2-inch bolts, and has power for geared tools to 12 inches. The company also offers a power drive with a lathe-type chuck—the Model 400.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 130.

New Diaphragm Pump Of Compact Design

■ A completely redesigned lightweight diaphragm pump, reported to be stronger and more compact than the earlier models first introduced two years ago, is announced by Marlow Pumps, a division of Bell & Gossett Co., Box 556, Ridgewood, N. J. The pump is available in two sizes.

The smaller unit, Model 202A, is used with 2-inch hose and handles up to 3,000 gallons per hour. A 3-inch size, Model 302A, removes up to 3,300 gallons of seepage water per hour. Both models are self-priming and operate on suction lifts up to 20 feet. They can be used with total liquid heads not exceeding 40 feet of water.

The new Marlow diaphragm pump.

The new pump measures 45½ inches long, 29½ inches wide, and 30½ inches high. The savings in size was accomplished by moving the chain drive from a vertical to a horizontal position. This also resulted in lowering the pump shaft, making the assembly more rigid. Power is provided by a Model 8-R6 Briggs & Stratton engine developing 2 hp on continuous duty.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 19.

GALION ROLL-O-MATIC TANDEM ROLLERS

Give you a NEW meaning in POWER

EFFECTIVE DRIVING POWER

The **ROLL-O-MATIC** *is simple to operate.*

There is no master clutch lever, gear shift lever, or throttle to bother with — all these operations are now done AUTOMATICALLY . . . To reverse the direction of travel, the operator simply engages the reverse clutch by easy movement of a convenient lever. The transition from forward to reverse travel is fast but smooth as velvet . . . Engine braking power on downhill grades is smooth, effective and dependable.

The most economical to operate.

Roller maintenance and operating costs take a nose dive when you standardize on Galion ROLL-O-MATIC Tandems. You can save up to 25% in fuel alone . . . you get up to 35% longer engine life . . . forward and reverse clutches last 40 to 50% longer . . . gears, shafts and bearings show very little wear . . . you can roll at least 10% more surface per day — under any conditions.

You get GALION TANDEMS with ROLL-O-MATIC DRIVE

AUTOMATICALLY *maintains rolling speed. Engine power is automatically increased or reduced as needed.*

FOR EXAMPLE

If you move the control lever to a rolling speed of 2 m.p.h., the roller will closely maintain this speed automatically, whether it is working up hill, on the level, down hill, or on curves.

New 6 x 2 Tandem Truck

■ Production of a 6 x 2 tandem truck is announced by Reo Motors, Inc., Lansing 20, Mich. The new vehicle, which has been added to the Reo F-50 series, has power only on the rear axle of the tandem assembly, while the front axle of the tandem is dead.

The rear-drive axle is a two-speed unit which means that the usual auxiliary transmission is eliminated, providing for a saving in weight. In addition, with only one power axle, a further weight saving is realized in the tandem assembly. Also, through the elimination of the auxiliary transmission and one carrier, horsepower loss from flywheel to tires is reduced.

This new 6 x 2 tandem truck has been added to the Reo F-50 series.

The Reo 6 x 2 truck is available in wheelbases as short as 140 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 50.

Tractor-Mounted Ripper In Lightweight Models

■ A new model of the Esco Dozer-Rooter has been announced by the Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Oreg. The unit is intended for tractors of the Caterpillar D4 to D6, Allis-Chalmers HD-5, and International Harvester TD-9 classifications—units of the 40 to 70-hp range with blade heights of 26 to 37 inches.

Two new models available—Models 26 and 32—weigh 495 pounds. The earlier units, now known as Models 38 and 42, weigh 950 pounds. The older models were designed for tractors with a horsepower range of 70 to 130 and more, with blade heights of 38 to 50 inches.

The Esco Buck Forte Dozer-Rooter is a heavy-duty ripping device consisting of a tooth-shank housing which mounts on the moldboard of a bulldozer by means of a special clamp. With adapters and saddles, the ripper fits most popular makes of heavy-duty dozers. The rooter shank has four adjustments of ripping depths below the dozer's cutting edge and is equipped with box-type replaceable points. Rooters can be attached in pairs or used singly on the dozer.

For further information write to the company, or use the Request Card at page 18. Circle No. 65.

Line of Roller Chains For Power Transmission

■ A complete line of double-pitch conveyor and power transmission roller chains has been announced by The Diamond Chain Co., Inc., 402 Kentucky Ave., Indianapolis 7, Ind. The chains operate over roller chain sprockets for light conveying, material handling, and moderate-speed transmission. These are American Standard Stock chains, and stock attachments are available for the conveyor line.

For further information write to the company, or use the Request Card at page 18. Circle No. 48.

Bin-Type Retaining Walls To Stabilize Embankments

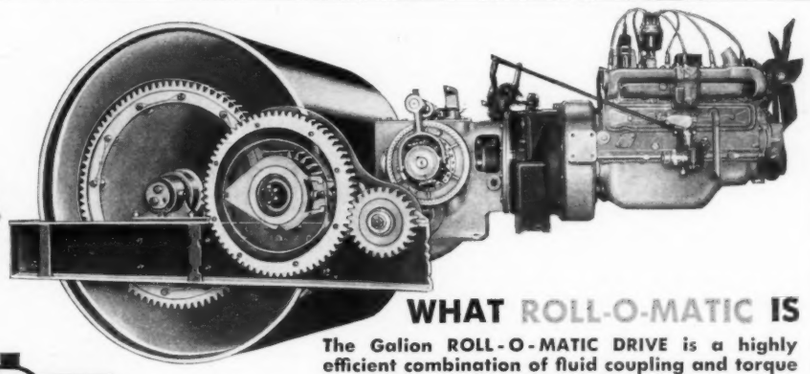
■ A new folder from Armco Drainage & Metal Products, Inc., 703 Curtis St., Middletown, Ohio, describes how metal bin-type retaining walls confine earth and stabilize embankments along highways, railroads, streets, and streams. Sectional bin-type design and simple bolted construction are employed.

Photographs of typical erection and installation work are shown.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 12.

MASTER CLUTCH AND GEAR SHIFT ARE ELIMINATED

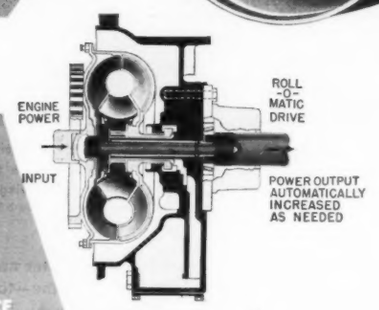
Power is applied automatically in exact proportion to the need.



WHAT ROLL-O-MATIC IS

The Galion ROLL-O-MATIC DRIVE is a highly efficient combination of fluid coupling and torque converter. *It automatically and smoothly multiplies the engine driving force* by means of oil in motion instead of by transmission gears. ROLL-O-MATIC DRIVE *must not be confused with fluid couplings or fluid drives.* All fluid couplings or fluid drives operate only as fluid clutches. They cannot increase engine torque on the drive shaft, only transmit it.

GALION ROLL-O-MATIC DRIVE serves not only as a fluid clutch, but also multiplies the driving force by means of a torque converter* — thus serving in addition as an automatic fluid transmission. *General Motors-Allison Torque Converter



UP TO 25% SAVING IN FUEL

More than TWICE the needed power is available.

35% MORE ENGINE LIFE

Gears, shafts, and bearings wear longer.

WHAT ROLL-O-MATIC DOES

- It saves you money through an amazing reduction of fuel, mechanical wear, and maintenance.
- It sets a new standard of job performance and quality.
- It provides the most efficient application of power.
- It simplifies tandem roller operation.
- It eliminates shock loads. No engine stalling or overloading.
- It assures smoothest reversing action.

Sets a new Standard of performance.

By actual tests, you can roll at least 10% more surface per day under any conditions. This is possible because of the wide range of working speeds available — and faster, smoother reversing at the end of each pass.

Rolling speeds from .8 m.p.h. to 5.5 m.p.h. are possible. ROLL-O-MATIC DRIVE provides an infinite number of driving ratios (WITHOUT gears).

Operators can devote more attention to efficient maneuvering and precise rolling — more and better work with less physical effort.

OTHER GALION TANDEM FEATURES

- Straight line spur gear final drive.
- Final drive gears located on left side of roller for close-to-curb work.
- Dual controls and movable operator's seat permit efficient operation of roller from either side of operator's platform.
- Hydraulic steering.
- Metal shield prevents dust, dirt, etc. from entering radiator.
- Three hinged grilles for complete ventilation of engine compartment and housing.
- Streamlining provides best visibility for the operator.

NO INCREASE IN FACTORY LIST PRICE!

A complete range of sizes

ROLL-O-MATIC DRIVE is supplied on 5-8, 8-10½, 8-12 and 10-14 Ton Tandem Rollers with gasoline engine--conventional "gear shift" models are also available with gasoline or diesel engines.

ESTABLISHED GALION 1907

The World's Largest Manufacturer of Road Rollers

THE GALION IRON WORKS & MFG. COMPANY

General and Export Offices, GALION, OHIO, U.S.A. Cable address: GALIONIRON, Galion, Ohio

Composite Pipe Piles Are Driven at Plant Site

THE USE OF PILE shell and composite pipe piling in driving foundation supports for a power plant extension at a Detroit automobile plant has resulted in considerable saving of both construction time and cost.

Spencer, White & Prentis, Inc., New York, N. Y., was the foundation contractor on this job, which saw the first use of pile shell and composite pipe piling in the Detroit area. A total of 53 cast-in-steel concrete piles with rated capacity of 75 tons was driven.

The piling consisted of a bottom section of 10¾-inch-diameter x .279-inch-thick Armco spiral welded pipe, 30 feet in length, and an upper section of 12-inch x 16-gage Armco Hel-Cor pile shell averaging 56 feet in length. The bottom pipe was closed with a welded conical point.

First procedure at the site was installation of the "doodle hole", a 16 - inch - diameter x ¼-inch - thick spiral welded pipe. This was driven to the full depth of 86 feet and then concreted up to 30 feet. Situated near the center of the work, this served as a base for threading the mandrel used inside the other pile shells, besides being one of the 53 permanent piles.

To install the regular composite piling, a crew first drove the 30-foot pipe section direct with a No. 1 Vulcan hammer. While this operation was going on, another crew welded a special adapter to the Hel-Cor shell in the stockpile. This simultaneous operation helped speed the whole foundation job.

The adapter is a device about 7 inches in height, with the top half cast in corrugations conforming with those in the 12-inch shell. The adapter is made to screw into the shell. The lower half of the adapter is cylindrical and is designed to fit over the outside of the 10¾-inch pipe section.

After the adapter had been welded into place, the shell was picked up and placed in the "doodle hole". The already poured concrete served as a base, so that the shell protruded about 4 feet above the ground. At this point, a Cobi pneumatic mandrel in deflated position was placed inside the shell.

A steam rig using a Vulcan hammer sets the 60-foot Cobi mandrel into a Hel-Cor pile shell prior to the actual driving operation. The bars on the outside of the mandrel will conform to corrugations of the pile shell, giving a tight fit for driving.

Shell Is Held Firmly

The mandrel was expanded by the use of nitrogen gas introduced into the rubber tube core at the center of the mandrel at an operating pressure of 125 psi. Compressed air could have been used just as satisfactorily had it been available. The pressure of the gas forced the four quadrants of the mandrel into a tight fit to hold the shell in place and supply the necessary protection during the driving process. The external surface of the mandrel has bars designed to fit the corrugations of the shell. Outside diameter of the mandrel is ¾-inch smaller than the inside diameter of the shell.

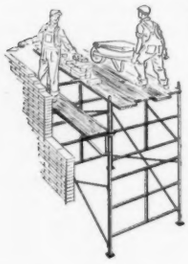
Next the pile shell with welded adapter and fitted mandrel was lifted from the "doodle hole" and placed on top of the previously driven pipe section. The pipe section was then welded to the adapter and the entire unit was driven home—to a minimum of 12 blows per inch. Following the driving, the mandrel was extracted and the process repeated on the next pile, while the driven pile was cut off at the proper grade and concreted.

The mandrel was needed to protect the shell being driven, and the "doodle hole" made possible the use

Watch Every Buck—
. . . *Carefully!*

Actually it's not how many bucks you shell out on original costs that count — it's *how much do you save* in erection time and in on-the-job performance. Here are the kind of *savings that count:* can you scaffold higher with fewer panels and parts? can you position plank-bearing brackets at intermediate levels? can you place material at hip-level where your mason can work easier and faster? There's one answer . . . you *can* with Universal Ezebilt Mason Panels, and we don't just make the claim — we show you how. You'll have a time-saver, a buck-saver and a life-saver with **UNIVERSAL Ezebilt SCAFFOLDING**

SU PANELS
Provide open bay for easy handling of planks and four plank bearing levels.



SUX PANELS
Provide three plank bearing and bracket rest levels.

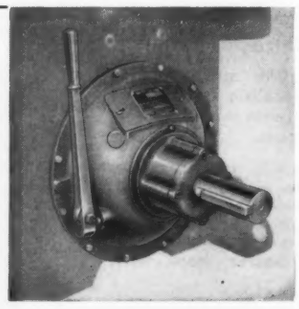
Write for New Informative Catalog

Distributors offer planning help and fast deliveries from Sales and Rental Stocks . . . See your phone directory

UNIVERSAL MANUFACTURING CORP.
ZELIENOPLE 1, PA.

FOR LONG-LIFE ECONOMY RE-POWER WITH—

FUNK POWER TAKE-OFFS AND GEAR REDUCTION POWER TAKE-OFFS



OTHER FUNK ITEMS:
Right Angle Take-Offs.
Front End Take-Offs.
Jack Shaft Extensions.

Ford Tractor Conversion Kit adapts 6 cyl. Ford engine, doubles power.

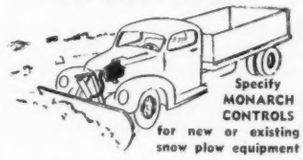
Special gear reduction with two shafts, one turning same speed and rotation as engine, the other anti-engine wise at optional reduction.

. . . are available with over-center clutches for all engines with SAE flywheel housings. Gear reduction units feature exclusive straddle mounted pinions; special ratios and special adaptions of standard units. Wide selection of standard types, sizes and ratios stocked for immediate shipment.

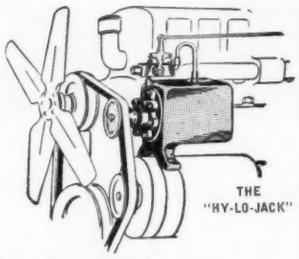
WRITE FOR CATALOG!
—our engineers will be glad to assist with your power problems.

FUNK AIRCRAFT CO.
3315 Airport Drive Coffeyville, Kan.

POWER HYDRAULICS for Snow Plows



Specify MONARCH CONTROLS for new or existing snow plow equipment



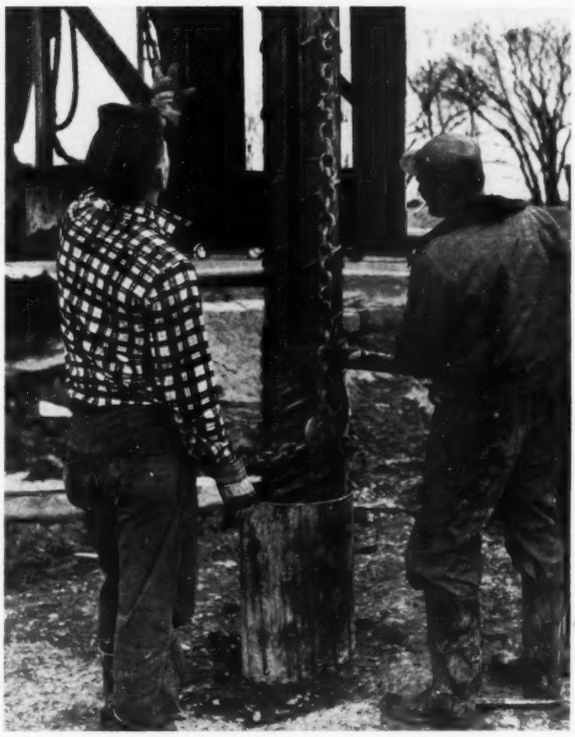
THE "HY-LO-JACK"

- Clutch operated models
- Thousands in use —
- 1000 #2 Pressure. 1 Gal. Per Minute
- Fit all trucks
- Fan belt driven
- Electric Models (6 or 12 volt) also available

Write Hydraulic Division

MONARCH ROAD MACH. CO.
324 North Front Ave.
GRAND RAPIDS 4, MICHIGAN

Mandrel used in driving 86-foot supports is threaded inside corrugated pile shells at central "doodle hole"



This closeup of operations at the central "doodle hole" shows the Cobi mandrel being inserted into the pile shell, which is held by an 86-foot welded pipe concreted up to 30 feet to serve as a threading pipe. The hoist chain holds the shell barely off the bottom of the pipe, while the peavy keeps it from turning.

The adapter used to join the two sections of the composite piling has the top half cast in corrugations to fit those in the upper section of piling. The lower part is cylindrical and is designed to fit over the outside of the lower section of piling.

of a lighter capacity crane and half the length of leads. Without this combination, 120 feet of leads plus the length of the hammer would have been necessary to handle both the 60-foot shell and 60-foot mandrel.

The piles, which averaged 86 feet from cutoff point to tip elevation, were driven through approximately 10 feet of fill, then through silt and soft plastic clay to hardpan. For the most part, the piles were driven in groups of three to five.

Set Near Old Piles

An unusual problem was presented by the presence of a large number of old wooden piles, which had been driven close together about 20 years before in anticipation of a planned extension. The cutoff point was 10 feet below the grade at the bottom of the fill.

Following the blueprint plan which showed locations of the wooden piles, crews on this job were able to drive the relatively thin pile shells alongside the wooden piles without damaging the metal pipes. Sometimes the shells were driven right between the old piles.

A large quantity of concrete had also been dumped in the ground at this point, probably at a time when a batching plant stood at the site, and this presented a further problem. Concrete breakers were employed to break up the mass before it could be moved.

The soft plastic clay widely encountered by excavating and construction crews in this region creates upheaval for the ordinary tapered cast-in-place piles. Displacement of the clay by subsequent pile driving tends to upheave those already driven. On this project, the specifications were very rigid. If a pile was upheaved more than ⅛ inch, it had to be redriven. However, only 16 redrives were necessary, and maximum upheaval on any one pile was ⅝ inch.

The composite pile used in this foundation project was designed to support three structures—a teardrop-type tank for the water softener unit, a boiler fly-ash silo, and a boiler bottom-ash silo. Weight of the three units loaded is rated at 1,360, 600, and 150 tons, respectively.

Kuljian Corp., Philadelphia, Pa., is the architect, engineer, and general contractor on the entire plant project. THE END

NEW

WICO XH MAGNETO OVERHAUL PACKAGE can save time, money, headaches in servicing... turn out far better repairs

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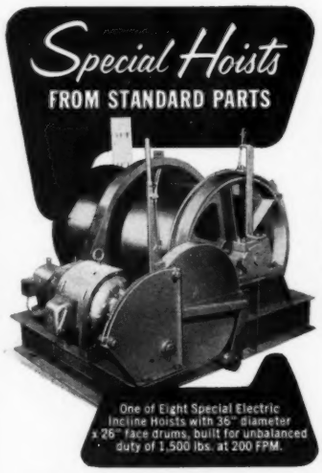

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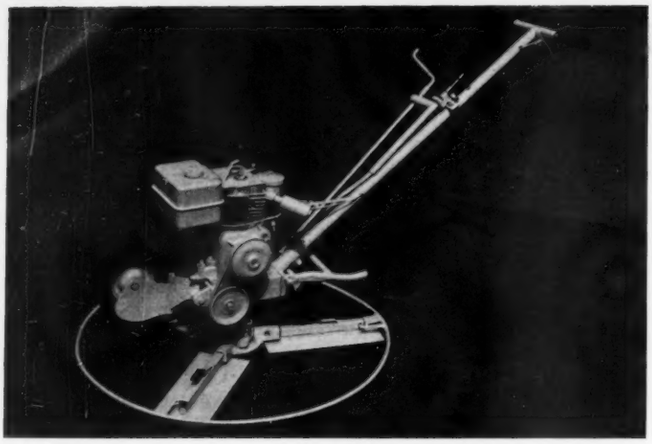

The new White Model T-1 concrete finisher features a retractable wheel on which it rides for transport.

THIS SIX-WHEEL DIESEL-POWERED Mack truck is one of 48 that will be used on the mammoth Rio Guarico hydroelectric project in Venezuela. Basically, these units are MACK LJSWX-D models with 10-cubic-yard rock bodies. They feature the Mack Balanced Bogie that allows all wheels to conform freely to irregular terrain and the Power Divider that distributes power between the two axles in proportion to tractive requirements. For further information write to Mack Trucks, Inc., 350 Fifth Ave., New York 1, N. Y., or use the Request Card at page 18. Circle No. 97.

Trowel-Type Finisher Has Transport Wheel

■ A retractable wheel makes the new White trowel-type concrete finishing machine a portable unit. The Model T-1 troweler has just been announced by the White Mfg. Co., 1227 W. Beardsley Ave., Elkhart 9, Ind. It is a 34-inch troweler carrying 3 blades and a 36-inch ring, and weighing 130 pounds.

Another unique feature resulting from the built-in wheel and stand is the way troweling and float blades can be mounted and removed. With the wheel down, the blades and ring are raised about 2 inches above the floor so that they can be removed for washing or for changing from float to finishing operations in a matter of seconds. The ring is instantly removed so that the machine may be wheeled through a doorway.

The steering column with all its controls is also removable. An operator can knock down the entire machine quickly, including steering column, ring, and blades.

The pitch of the blades is controlled during operation from the top of the steering column by a lever adjustment. A safety feature in the throttle control slows the engine to idling speed if the operator should happen to let go of the handle. Power is supplied by a Briggs & Stratton 2-hp gasoline engine with an automatic clutch.

For further information write to the company, or use the Request Card at page 18. Circle No. 59.

Masonry Drilling Guide

■ Specific information on drilling all sizes of holes in soft, medium hard, or extremely hard masonry can be obtained by referring to a new manual from the New England Carbide Tool Co., Inc., 60 Brookline St., Cambridge 39, Mass. The new masonry drill-bit guide helps the operator to use the right kind of bit in the right kind of drill to make the required size hole.

Recommendations are made for four types of carbide-tipped masonry bits manufactured by the company, for one or two-man masonry drilling. These include the Cyclo-twist for rotary drilling of soft and medium masonry; the Cycle-Core for rotary drilling of hard masonry; and the Thunder-Twist and Thunder-Core for hammer drilling of extremely hard and abrasive masonry.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 40.

Check price per pound of lifting capacity

There is a very quick way to determine which crane or excavator offers you biggest production capacity per dollar of equipment investment. Compare machines on the basis of price per pound of lifting capacity.

Remember, lift capacity is *work capacity*. Obviously, the machine with the heaviest lift rating not only picks up larger crane loads — it also has more strength and stability to handle bigger dragline and clamshell buckets on a wider work range — more power and speed to increase shovel and hoe production.

Check the Koehring lift ratings shown below — then ask your Koehring distributor to show you the figures on price per pound of lifting capacity.

compare for yourself:

KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load)		PRICE PER POUND OF LIFT CAP.*
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
405 CRAWLER	1-Yd.	40,000 lbs.	40-foot boom at 12-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

Figures available on request—ask your Koehring distributor to see them.

KOEHRING HEAVY DUTY

Data on Torque Limiters

■ A catalog describing torque limiters is available from the Morse Chain Co., 7601 Central Ave., Detroit 10, Mich. Design and operation information is given for the adjustable slip-clutch devices, which provide overload protection for machinery drives. Included are specification tables for a line of eleven standard models having torque capacities ranging from 20 to 620 foot-pounds.

The Morse torque limiters can be installed on concrete machinery, mixers, conveyors, power winches, and other construction equipment. They are used on rotating members such as sprockets, gears, or pulleys.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 131.

TWO 18-INCH BERGER precise dumpy levels speeded the work of leveling foundation base plates for equipment and establishing grade-pin elevations at the billion-dollar gaseous diffusion plant being built at Paducah, Ky., for the Atomic Energy Commission. The contractor is F. H. McGraw & Co. For further information on these levels write to C. L. Berger & Sons, Inc., 37 Williams St., Boston 19, Mass., or use the Request Card at page 18. Circle No. 132.

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS · KWIK-MIX

Hard-Wear Track Shoes Have Double Grouser

■ Owners of Caterpillar D8 tractors who use their machines on rock and other hard surfaces may now purchase double-grouser track shoes designed to have a considerably greater resistance to bending.

This resistance is achieved by having two parallel grousers, lower but wider than the single-grouser shoe, with added metal at the edge of the shoe to cover the hinge joint. The body of the shoe is also made thicker. The second grouser at the midsection of the shoe provides protection to the track-shoe bolt heads, so that they are not subjected to pounding which causes loosening of the bolts.

For further information write to the Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 118.

Expand Boiler Line

■ Its new CB line of boilers has been extended to include units of 50, 60, 70, and 80-boiler-hp capacity, according to an announcement from the Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis. These new self-contained CB boilers are available for installations requiring steam or hot water boilers for processing or heating. Their features include silent operation and full modulating burners.

Models are available to handle all grades of fuel oil, light distillate No. 2 to No. 6, or Bunker C fuel.

For further information write to the company, or use the Request Card at page 18. Circle No. 91.

Booklet on Sump Pumps

■ A booklet on sump pumps designed to help the user choose from any of 4,000 or more models is offered by the Byron Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif. By first determining the desired gpm and total head, the contractor can then use the selection charts to find the individual model needed. Capacities of pumps described range from 10 to 2,600 gpm, with heads from 20 to 300 feet.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 64.

Adjustable Horse for Use With Scaffolds or Stages

■ A simple, adjustable, tubular-steel horse is illustrated in literature from the Broadway Mfg. Co., P. O. Box 252, Waukesha, Wis. The horse is offered in three sizes which can be adjusted from 18 to 31, 24 to 44, and 36 to 65 inches. A total of 5, 7, and 10 adjustments, respectively, can be made in these models.

Because of this flexibility of design, these horses are suitable for a wide variety of uses, including supports for scaffolds and stages.

Holes in the top cross-channel make it possible to bolt 2 x 4's or 2 x 6's into place. The horses fold flat for storage and hauling.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 93.

In a new application, Bulkbinder strapping is used by a Rieth-Riley Construction Co. crew to bind a concrete column form. The method saved the contractor $60.12 on each column poured for a cloverleaf intersection near Fort Wayne, Ind.

Column Form Cost Is Cut With New Binding Method

By using steel strapping in place of clamps on concrete column forms, Rieth-Riley Construction Co., Goshen, Ind., contractor on a highway cloverleaf near Fort Wayne, Ind., effected an estimated 33 per cent saving in labor and a 48 per cent saving in materials. Calculated savings amounted to $4.90 per cubic yard of concrete, and $5.12 on lumber used in the same area—a total of $60.12 per column.

Each of the columns at the intersection of Highways 30 and 33, near the east city limits of Fort Wayne, is rectangular in shape. Measuring 24 x 2 x 3 feet, they consist of approximately 6 cubic yards of concrete weighing 24,030 pounds. The rate of pour was 24 vertical feet per hour, and the setting temperature of the concrete was 50 degrees. All the concrete was vibrated mechanically.

Normally, it would have taken workmen about four hours to erect the three columns of falsework on the project. With the strapping, the work was done in about an hour. Since the same workmen who would apply the clamps were able to strap the columns easily, no special labor was required.

The forms, prefabricated on the ground, were bound with 1¼-inch Bulkbinder strapping. This, as well as the lightweight strapping equipment—tensioning tool, sealer, strap cutter, and strap reel—was supplied by A. J. Gerrard & Co., Melrose Park, Ill.

After the forms were bound, they were lifted over the reinforcing rods by a crane, and the concrete was poured. While making for economy, the forms also helped to eliminate the wave effect created on the finished column by other methods.

Although all the columns on this job were rectangular in shape, the strapping can be used in casting cylindrical columns. The strapping can also be placed much closer together than clamps so that the bulge or spread problem is eliminated. General superintendent for Rieth-Riley Construction Co. was H. P. Kunkler, and J. M. Spake represented the state on the project.

Buy a Bond today!

Line of Clay Spades

■ A fine-grain forged tool steel of special analysis is used in Brunner & Lay clay spades for clay diggers, the manufacturer reports. This tough steel reportedly makes a lightweight spade which helps to reduce operator fatigue and increases the cubic yards of clay, earth, or similar material removed per day.

Blade sizes are 4½, 5½, and 8 inches in width. Shank sizes are ¾-inch square x 2¾ inches, ⅞-inch hexagonal x 2¾ inches, ¾-inch hexagonal round x 2¾ inches, ⅞-inch hexagonal round x 3¼ inches, and 1-inch hexagonal x 4¼ inches. The standard length is 16 inches.

For further information write to Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 42.

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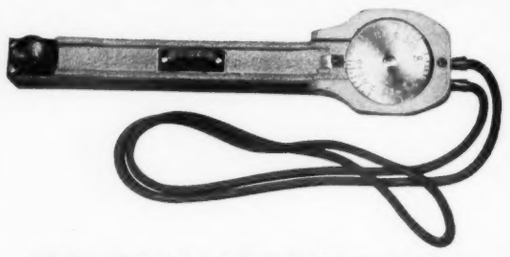

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Cambridge, Massachusetts

Portable Belt Conveyor For Building Materials

■ A new conveyor for contractors, especially those engaged in erecting commercial buildings, has been introduced by the Fairfield Engineering Co., Standard Products Division, 842 Chicago Ave., Marion, Ohio. The new conveyor is designed for handling building block, bricks, mortar, tile, roofing, gypsum, and other materials. It comes in 24, 32, and 40-foot lengths and is powered by a 4-hp gasoline engine or 1½-hp electric motor. The unit can be towed behind a truck or automobile.

For further information write to the company, or use the Request Card at page 18. Circle No. 134.

Rock Breakers and Drills

■ A catalog describing a variety of pneumatic rock-breaking tools is available from the Bicknell Mfg. Co., 12 Lime St., Rockland, Maine. The booklet lists rock drills, jackhammers, sinkers, drifters, and wagon drills available from the company. Also shown are both light or heavy paving breakers with a complete line of moil points, chisel bits, asphalt cutters, spades, tampers, "boulder busters", and solid drills. A lightweight demolition and general purpose digging tool, the Bicknell Diggerdrill, may be of particular interest to contractors.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 135.

Miller SWIVELS for Blocks

As adapted to blocks, MILLER Ball Bearing Swivels prevent loads from spinning and fouling the lines. Miller Swivels turn freely under heaviest loading (capacities to 250 tons). Small Miller Swivel on dead end simplifies restringing —no line twist or kinking.

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■ A feature of the Warren-Knight precision transit Model 7c F is its ability to focus crosshairs with or without stadia so as to eliminate a frequent source of error in taking levels. In addition, a minimum close focus at 4½ feet saves set-up time.

Two rows of figures on the horizontal circle, numbered in opposite directions and differentiated by both size and slant, make for more accurate readings. A long compass needle on a V-jewel center bearing permits precision readings to half degrees around the full circle.

A further feature is the location of the telescope focusing screw at the end of the axle. This makes it unnecessary to reach underneath the transit and avoids the possibility of changing the line of sight.

A medium-size Warren-Knight precision transit.

For further information write to the Warren-Knight Co., 136 N. 12th St., Philadelphia 7, Pa., or use the card at page 18. Circle No. 17.

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deliver more power, more ruggedness, for less money!

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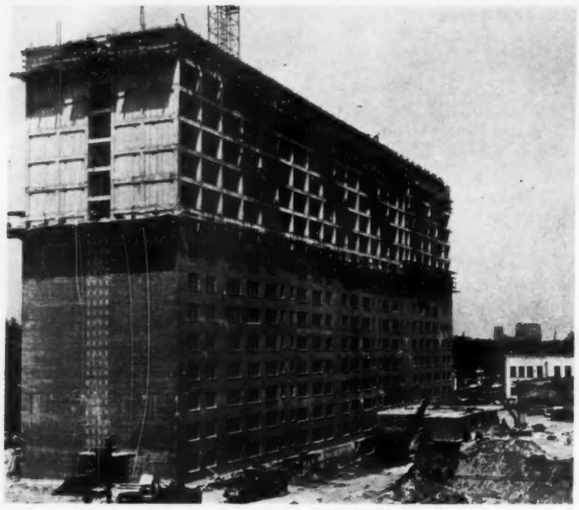

Shear walls in this Chicago Dwelling Association apartment building brace the structure against wind sway, thus reducing the chance of partitions cracking from structural stress. The walls, which are 8 to 10 inches thick and placed approximately 50 feet on center, are built up one floor at a time.

Homogeneous construction reduces structural movement from wind load, helps to prevent cracked partitions

Shear Walls Reduce Damage From Sway

By WILLIAM COHEN, Holabird & Root & Burgee, Design Engineers, Chicago

THE CURRENT TREND to larger glass areas and unobstructed ceilings and partitions means improved design appearance for multistory structures, but it has necessitated a careful restudy of the basics of bracing on the part of structural design engineers. Experience has made it increasingly obvious that unless the structure is sufficiently braced to reduce movement to a minimum, damage from partition wracking may make maintenance expense greater than the amount that would be saved through construction without proper bracing.

A study of several existing multistory structures across the country, made by various materials manufacturers, indicates the harmful effects of structural movement—whether caused by wind, earthquakes, contraction and expansion of materials due to temperature change, or dimensional change due to drying of cementious materials over a 12 to 18-month period. Such movement does not necessarily indicate an unsafe structure, but it does produce unsightly cracks and hasten deterioration.

In studying the effects of structural movement in buildings across the country, design engineers erected partitions of almost every description, one after the other, in identical locations. In each case, the partitions cracked badly. Where the identical partition was erected and isolated from the structural frame of the building, no cracking occurred.

When a building moves from wind load (sway), each partition normally forming a rectangular shape becomes a parallelogram. And although it deflects into a parallelogram by only about 0.3 inch in a 20-story building which moves 7 inches at the top, enough wracking results to crack the partition. If other normal movements, such as those caused by temperature change or drying out of concrete, are added to this sway, the degree of seriousness increases.

The means of providing adequate wind bracing have been greatly reduced today by the use of metal and glass enclosures, thin floor systems, and light column sections. But among other methods employed, Holabird & Root & Burgee has found

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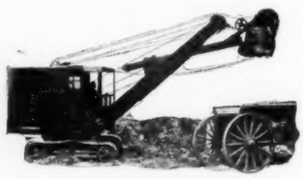

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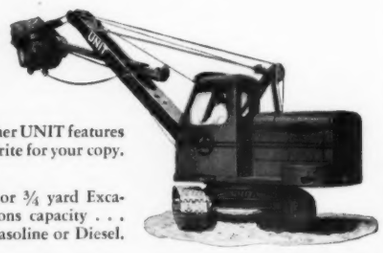

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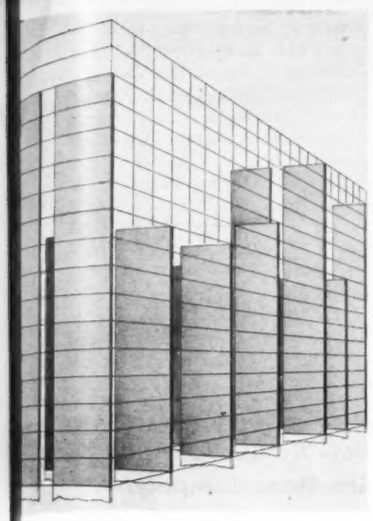

An X-ray drawing of the Chicago apartment building details the stress wall construction. The stress walls rise to varying heights, since it is not required that they all extend to the full height of the building. Floor systems also add to the wind resistance so that wind shears may be reduced as the building rises.

shear wall construction to be both economical and efficient.

Shear wall construction, though not new, deserves careful consideration by design engineers interested in reducing maintenance costs for building owners.

Each shear wall acts as a solid plate, stiffened by the floor systems. Properly reinforced and placed with proper thickness and spacing, these walls have sufficient rigidity to reduce, if not completely eliminate, harmful partition wracking caused by structural movement.

Erecting Procedure

Shear walls incorporated in the Chicago Dwellings Association apartment building in Chicago, as engineered by Holabird & Root & Burgee, vary from 6 to 10 inches in thickness and are placed approximately 50 feet on centers. Concrete forms and reinforcing were installed to bring all the shear walls up one story at a time, permitting the concrete to extend a few inches above each floor level and the steel reinforcing to protrude beyond this. Reinforcing members of the shear walls were thus overlapped at each floor level, and the concrete protrusions carefully cleaned before placing fresh concrete so that homogeneous walls the full height of the building were obtained. Each floor was joined to the shear walls in the conventional manner, and concrete was placed so that maximum strength was obtained at these points of connection.

Holabird & Root & Burgee has been able to eliminate many problems of excessive structural movement by incorporating shear wall construction in multistory buildings. A study of a proposed 23-story building showed that, at less cost, potential deflection of 7.12 inches resulting from use of a conventional construction method could be reduced to 2.86 inches by the use of shear wall construction.

The savings, though significant at the outset, are not nearly as important as the long-range savings and good will that may accrue to the building owner through lower maintenance cost in succeeding years.

THE END

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WE MANUFACTURE
ROTARY SWEEPER CORES
Most Any Popular Make To Fit
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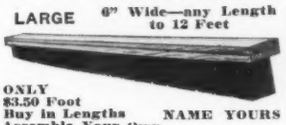
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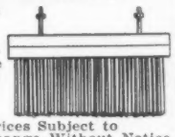

Prices Subject to Change Without Notice

SINCE VAN BRUSH MFG. CO. 1928
327 SOUTHWEST BLVD - KANSAS CITY, MO.

For Greater Output and More Profits
See The Complete New Line of
"QUICK-WAY" Truck Shovels
Reg. U.S. Pat. Off

Offering Sensational Engineering Advancements with Traditional "Quick-Way" Simplicity of Design, Interchangeability of Parts, and Rugged Construction

New Features—Models L2 and E2

NEW FULL VISION CAB • All Steel, with safety glass. 360° vision. Controlled ventilation. More comfort.

NEW CLUTCHES • Reversible shoe, improved "roll-in," self-energizing, single adjustment type. All interchangeable.

NEW BRAKES • Automotive type pedal action. Increased leverage. Positive effortless braking power.

NEW CENTER PIN THRUST WASHERS • Heat treated. Encased in oil tight pans. Long life and easy swing due to submerged lubrication in light weight oil.

NEW SWING ROLLERS AND SWING ROLLER PINS • The conical, high alloy steel swing roller and roller pin diameters have been increased. All four rollers and pins are interchangeable and easily removable. Hardened rollers and pins on Model L2 equipped with large, permanently lubricated ball bearings. Model E2 equipped with large antifriction phosphor bronze bushings and both with submerged center pin thrust washers give the operator smooth, easy, effortless swing. (Hardened rollers and pins with permanently lubricated ball bearings available for Model E2 at extra cost.)

NEW GEAR PANS • New design oil-tight pans encase engine, jack shaft, and main hoist drive gears.

NEW CONTROL CABINET • New design with independent self-filling hydraulic cylinders on each control line. Due to increased leverages in the hydraulic application, greater pressure is transmitted with less effort. Improved clutch lock-in system.

NEW CONTROLS • All control levers, large brake pedals, clutch throwout lever, house lock lever, throttle, etc., have been conveniently grouped with the operator's comfort and additional ease of operation in mind.

NEW HOUSE LOCK CONTROL • New foolproof and positive over-center house lock control. Designed for greater ease of handling and conveniently located for operator.

NEW SET-BACK GANTRY • Bridge type, all-welded construction. Allows better vision, makes crane work easier.

NEW FLOOR FRAMES,
NEW SIDE FRAMES,
NEW COUNTERWEIGHT.

CAPACITY • Model L2: ½ cu. yd., 10 ton crane. Model E2: 4/10 cu. yd., 7½ ton crane.

New Features—Model S2 & J2

Now equipped with NEW BRAKES, NEW CONTROL CABINET, NEW CONTROLS as described above, and NEW CLUTCHES with new increased fulcrum leverage insuring easy energizing clutch action with less effort to the operator.

CAPACITY • Model S2; ⅓ cu. yd., 5 ton crane. Model J2: ¼ cu. yd., 3 ton crane.

Fully Convertible to...

Trench Hoe	Pile Driver
Crane	Magnet
Shovel	Front Dump Shovel
Dragline	Hammer Drive
Clamshell	Clam

Backfiller Blade, Orange Peel, Scoop, Snatch Block, Self-cleaning Trench Hoe Bucket, Telescoping Boom, Log Grapple, Hay Fork, Skull Cracker, and many other special tools available. *Mounted on your own truck or complete with new truck of your choice.*

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"Quick-Way" Truck Shovel Co.
Dept. 170, 2401 E. 40th Ave.,
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Yes, I'd like to know more about the NEW line of labor-saving, money-making "Quick-Way" Truck Shovels. Please send complete details.
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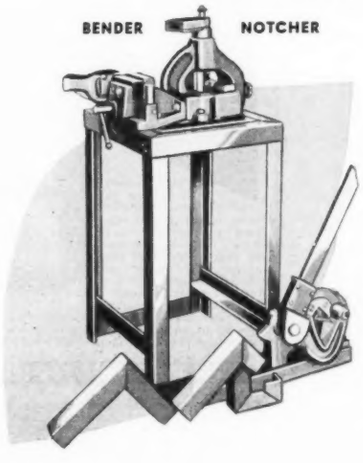
WHITNEY-JENSEN
METAL WORKING TOOLS
FOR 43 YEARS

BENDER NOTCHER


NO. 455
ANGLE IRON
COMBINATION

An unusually strong and compact unit for shearing, notching, and bending angle iron. Adaptable for on-the-job work or permanent mounting in the shop. Floor space required — 21-½" x 26". Capacity — all sizes angle iron up to and including 2" x 2" x ¼". *Write for our new Complete Catalog.*

WHITNEY METAL TOOL COMPANY • 720 FORBES ST., ROCKFORD, ILL.

Cable-Dump Trailers

■ A line of cable-operated dump trailers is offered by Winch-Lift, Inc., First National Bank Bldg., Shreveport, La. The Clement dump trailers, operated by a winch, a cable, and lift arms, eliminate heavy subframes. These units have seen service hauling sand, gravel, and other bulk materials, and haul heavy payloads because of the reduced dead weight in the lift mechanism.

The trailers are made to spot-dump by setting the trailer brakes and letting the winch and cable pull the tractor backward. This shortens the wheelbase between the trailer wheels and the tractor wheels, causing the lift arms to raise the front end of the dump bed. The wheels are drawn together by the cables, connecting sheaves at the rear of the trailer with sheaves on the upper fifth wheel of the tractor. The cable is drawn by a winch on the tractor, and the winch is operated by a control in the tractor's cab. Models are offered in capacities ranging from 8 to 35 cubic yards measured struck. Tandem-axle units are offered in 15 and 24 cubic yard capacities. All models are offered complete with a self-loading fifth wheel and an automatic tailgate latch.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 133.

The cable-operated Clement dump trailer is offered in single and tandem-axle models. The chief feature is reduction of dead weight in the dumping mechanism. The unit is manufactured by Winch-Lift, Inc., Shreveport, La.

New Roller Bearings Are More Compact

■ Two new tapered roller bearings for wheels are announced by The Timken Roller Bearing Co., Canton 6, Ohio. These bearings are now made smaller and more compact than before through the use of metallurgical and geometric refinements. The new automotive inner front-wheel bearing, for example, has an outside diameter of 2.328 inches, while its predecessor measured 2.441 inches. The old inner front-wheel bearing contained 15 rollers, while the new bearing contains 19 rollers.

Similar refinements have been made on the outside front-wheel bearing. The new outside bearing measures .157 inch less in outside diameter than its predecessor. The old outside front-wheel bearing contained 12 rollers. The new bearing contains 14.

The two inner and outer front-wheel bearings weigh a total of .46 pound less or 25.5 per cent less than present front-wheel tapered roller bearings. The spindle length may in some cases be shortened and still retain wheel rigidity. The lighter bearings, hubs, and spindles mean less unsprung weight. The lighter the unsprung weight, the less force is exerted against the springs, so that a smooth ride and greater economy result.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 105.

It's Barnes Again

ON ANOTHER TOUGH ONE!

PUMPING 36,000 G.P.H. AT 130 FEET OF HEAD

Here is really a tough one! With the discharge lines running straight up for 100 feet and then taking off at an angle for 20 more feet — these two Barnes 90M Self-Priming Centrifugal Pumps are doing an outstanding job of controlling the water level in this gypsum quarry of the Celotex Corporation at Port Clinton, Ohio.

•

To make the job even tougher, the water is high in sulphur content and laden with grit and silt. Yet these Barnes pumps have been on the job day-in-and-day-out — one pump for 7 years — the other for 3 years. Maintenance has been practically nothing — only to shim the impeller of one pump to bring it within recommended clearances.

•

So it's Barnes again on another tough one. And if Barnes is tops on the tough jobs — think what a buy they are for the every day, ordinary de-watering jobs.

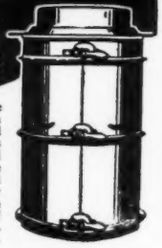
•

The Barnes Line of Self-Priming Centrifugals ranges in suction and discharge sizes from 1-in. to 6-in. — with capacities from 2,000 to 90,000 G.P.H. Choice of Gasoline, Diesel, Electric or Pulley Drives.

FOUNDED 1845 Barnes MANUFACTURING CO. MANSFIELD OHIO

★ ★ ★ BUY THE BEST . . . BUY BARNES ★ ★ ★

The Quinn Standard FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 40 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

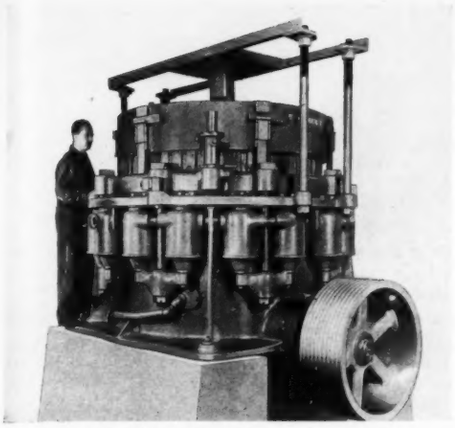
QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers of
QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645 - 12th St. Boone, Iowa



The Nordberg Gyradisc crusher produces long tonnages of small aggregate and coarse and fine sand.

New Crusher Produces Small Chips and Sand

■ A new crusher that produces large tonnages of small chips, coarse sand, and fine sand has been announced by the Nordberg Mfg. Co., Chase and Oklahoma Aves., Milwaukee 1, Wis. The Nordberg Gyradisc crusher employs a new method of crushing, using the Gruender method of reduction. It alternately impacts and releases a thick mass of material. The fines are produced by the combination of impact and attrition of the multilayer mass of particles as the mass moves through the crushing chamber.

The ideal feed for the Nordberg Gyradisc is the open-circuit product of a Symons cone crusher containing material of minus 1-inch, ½-inch, or ⅜-inch, and fines. The crusher may operate in open or closed circuit with fines being separated by pneumatic or mechanical methods. It is offered in 54-inch size.

For further information write to the company, or use the Request Card at page 18. Circle No. 81.

Power-Swing Jumbos For Mounting on Any Available Vehicle

■ With new power-swing jumbo booms, hydraulic pumps, and remote-controlled drill-positioner units available from Gardner-Denver Co., S. Front St., Quincy, Ill., a contractor can now design his own remote-controlled drilling rig to meet specific job conditions and build it on his own truck, tractor, half-track, jumbo carriage, or other available chassis.

Gardner - Denver power - swing jumbo booms are available in lengths up to 168 inches, and swing hydraulically through a horizontal arc. Hydraulic power also raises and lowers the boom through a vertical arc.

The hydraulic drill positioner located at the end of the boom is remote-controlled and swings the drill horizontally and vertically for precision hole spotting. The drill used may be a 3, 3½, or 4-inch drifter or the DH99 Gardner-Denver deep-hole drill.

Hydraulic power for operating the various swings and controls is supplied by a hydraulic pump powered by an air motor.

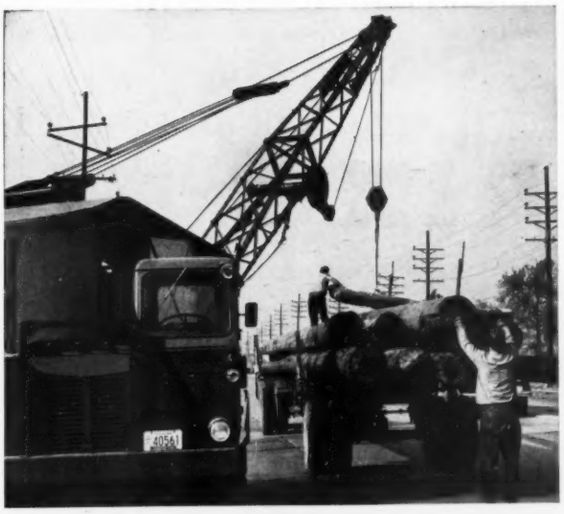
For further information write to the company, or use the Request Card at page 18. Circle No. 49.

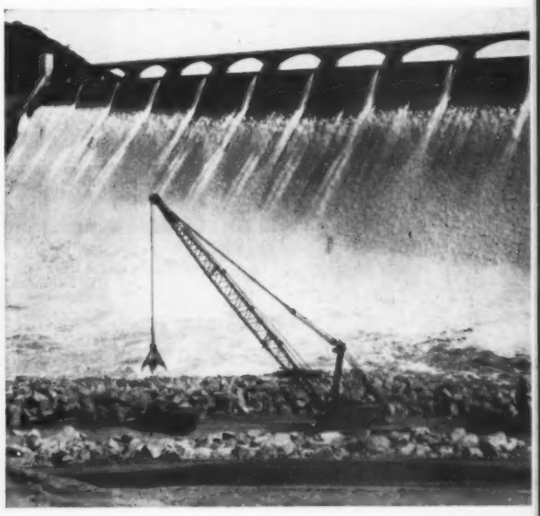
Single Unit Does AC and DC Welding

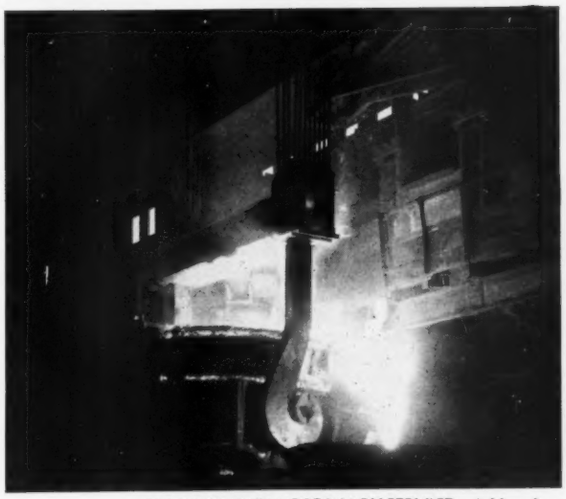
■ A single machine that provides both ac and dc welding is announced by the Harnischfeger Corp., 4605 W. National Ave., Milwaukee 46, Wis. It is possible to change from one current to the other while welding to take advantage of the service best suited for the work. A flip of the switch gives the desired current.

Ac welding service ranges from 7 to 275 amperes, and dc service, from 7 to 200 amperes. The machine operates on 220-440 volt, 50-60 cycle current, single phase. It is equipped with P&H Dial-lectric control which provides instantaneous heat selection.

For further information write to the company, or use the Request Card at page 18. Circle No. 22.



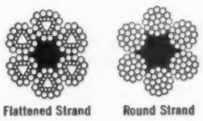




PROVING EXTRAORDINARY SERVICE—A Hercules Flattened Strand crane rope delivered 18 months service, compared to 6 months for ordinary rope. It performed equally well as a clamshell bucket rope. On a hot ladle crane it outlasted round strand rope by 4 to 1, and still tested at higher-than-rated strength. It was chosen for its super strength to haul the car on the continent's largest cableway at Kitimat.

Can Flattened Strand solve your special wire rope problem?

Hercules Flattened Strand is a special kind of wire rope that provides extraordinary service on special kinds of jobs.



Flattened Strand Round Strand

The key to the difference is the triangular shape of the strands. Notice how the strands support each other; how the rope circumference is almost perfectly round; and how the core is smaller. There is 10% more steel in Hercules Flattened Strand than in round strand ropes of the same diameter. That means *10% more strength* and *10% greater safety*. Flattened Strand wears longer and more evenly . . . and is easier on sheaves and equipment.

If you can use this Super-rope, you'll soon begin saving time, labor, money. Why not investigate?

Because Leschen pioneered and perfected Hercules Flattened Strand wire rope, Leschen is your best source of additional information. Ask your Leschen man, or write for "The Flattened Strand Story."

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

LESCHEN
HERCULES Red-Strand
WIRE ROPE

Downtime Losses Reach Every Part of the Job

By J. W. Symonds, Peter Kiewit Sons' Co.
Grand Island, Nebr.

Indirect costs pyramid to make total expenses greater than the price of repair, labor, and equipment rental

WITH COMPETITION growing in the construction industry and equipment one of the major factors in performing operations at a profit, contractors have to be on the lookout for machines which will enable them to conduct business more economically and efficiently. For them, new equipment must show a gain in one or more of three qualities, without undue sacrifice of the other qualities.

The new equipment must be able to carry a larger load, work faster, and be available for use a large percentage of the time. Working against a gain in the latter requirement is downtime.

Generally, downtime is thought of as time lost when equipment is unable to work because of mechanical failure. But downtime also includes time needed for maintenance work, time spent waiting for repair parts, time spent in overly complicated repair and service methods, and time lost due to "psychological downtime".

Downtime affects a contractor's costs in three ways: through cost of repair parts, cost of direct and indirect repair and service labor, and cost of the loss of the unit's service.

Repair and Labor Costs

The cost of repair parts is always greater than the price of the parts which have failed. Gaskets, locks, seals, and other related items go into the repair. Failures often involve other related items costing many times the price of the part which failed. Added to this minimum cost for parts is the cost of labor, which can skyrocket if additional components have to be dismantled or removed to enable a repairman to get to the part which failed.

Overly complicated methods of repair—as when not only a clutch must be removed but a transmission dismantled as well, so that the front transmission oil seal can be replaced—stretch downtime and increase costs for the contractor. Often, in doing a job like this, the mechanic may lose a bolt, a nut, or a tool in the transmission. Increased downtime is the inevitable result.

Overly complicated service methods, too, can increase downtime. One diesel engine requiring special attention has a complicated oil filter, with each of the two filter compartments containing two elements and two small metal stampings. Since these stampings come out with the filter elements and are reversible, they can be replaced right side up or upside down, or they may even be lost in the dirt and forgotten. If the stampings are replaced in the wrong way or forgotten, the engine will be fed raw oil.

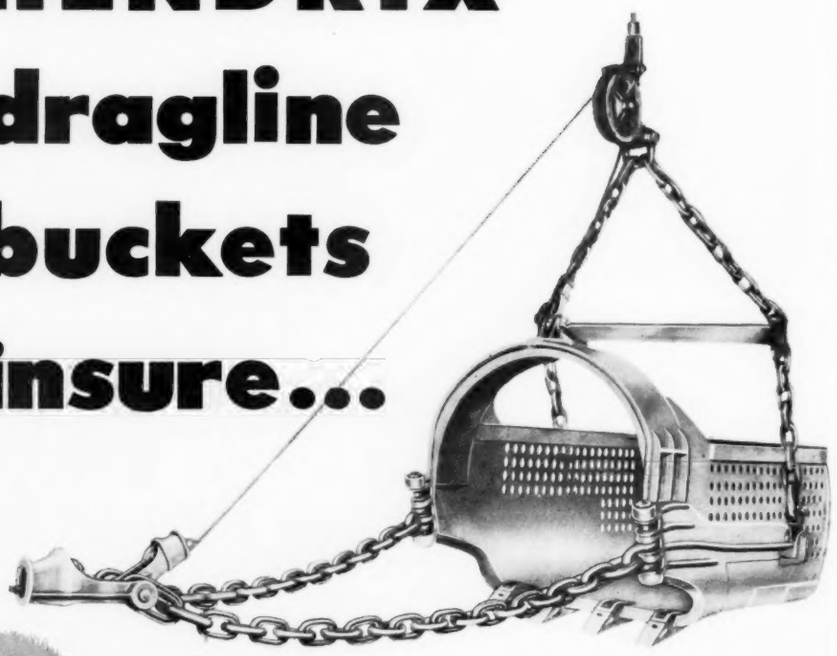
When a piece of equipment or a manufacturer gets a poor reputation, "psychological downtime" can occur. The operator or supervisors, feeling it is a lost cause to try to make the machine produce, consciously or unconsciously work out ways to keep the equipment out of production.

Loss of Service

All of these factors contribute to the cost of losing a unit's service, a cost represented by the hourly rental of the equipment for the time it is not working. Reduced pay quantities make the actual loss for the contractor much greater. If the machine is a key unit—paver, finishing machine, shovel—the entire spread is crippled and costs further multiplied.

Downtime losses which cannot be accurately measured include the ill will which may be felt by the representative of the awarding agency, and lowered employee morale. Increased operational costs and further delays can result from these indirect costs. And excessive downtime may force a job to be carried over to

HENDRIX
dragline
buckets
insure...



profitable
operation on every Job!

3 TYPES

TYPE "LS"
A lighter weight bucket designed for levee and drainage work.

TYPE "TS"
Engineered and classified as a general purpose bucket.

TYPE "HS"
A heavy duty bucket for moving shale or any hard formation.

3/8 to 40 Cubic Yards

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Hendrix Lightweight DRAGLINE BUCKETS

Big Rigs

Pay Off In Profits!

DON YOUNG, SUPT. GLENN OLSON, PRES.

An Actual Job Report from IH

THE G.A. OLSON CONSTRUCTION COMPANY UP IN MARSHALL, MINNESOTA, IS A LONG WAY FROM BEING A BIG OUTFIT... BUT IT DOES THINGS "IN A BIG WAY." GLENN AND BRUCE OLSON -- BOTH IN THEIR EARLY 30'S -- RUN THE SHOW...

IT'S A TIGHT SCHEDULE, BRUCE, BUT WE'VE GOT THE MEN AND EQUIPMENT TO DO THE JOB.

WE KNOW FROM PAST EXPERIENCE WHAT THOSE BIG INTERNATIONALS CAN DO. WE'LL LICK IT, GLENN!

THE OLSON BOYS STARTED EARLY... BACK IN '42, THEIR DAD, A VETERAN MINNESOTA CONTRACTOR, HAD TAKEN ON A TOUGH ASSIGNMENT WHEN HE PITTED THE G. A. OLSON CONSTRUCTION COMPANY AGAINST THE CANADIAN WILDERNESS. HIS WAS ONE OF SEVERAL AMERICAN OUTFITS PUSHING THE VITAL ALCAN DEFENSE ROAD THROUGH AHEAD OF THE SURVEYORS...

WE'D BETTER FELL A COUPLE OF LOGS ACROSS THIS BOG... THEN BRING UP THE EQUIPMENT IN THE MORNING.

RIGHT, DAD. THEN WE'LL BE SET TO TACKLE THE NEXT 10-MILE STRETCH AT DAWN.

I'LL GO BACK AND GET THE CREW TO 'LEAP-FROG' THE EQUIPMENT THROUGH THE OUTFITS WORKING BELOW.

THE CONSTRUCTION CAREERS OF THE TWO BOYS WERE INTERRUPTED BY THEIR SERVICE IN WORLD WAR II. BUT, WHEN PEACE CAME...
NOW WE CAN TEST THOSE 'BIG EQUIPMENT' IDEAS OF YOURS, GLENN.
I'VE BEEN DOING A LOT OF FIGURING, BRUCE... AND I'M CONVINCED THAT BIG RIGS WILL PAY OFF IN PROFITS. LET'S TALK TO DAD.
AND SOON...
IT'S THE BOYS' IDEA, TOM -- BIGGER, FASTER EQUIPMENT.
YOU'LL BE GLAD YOU CHOSE INTERNATIONALS. THEY STAND UP.
THIS '24' HAS THE WORK CAPACITY THAT'LL MAKE OUR PLAN WORK, BRUCE!
THE OLSONS' FIRST I-H CRAWLER WAS FOLLOWED BY ANOTHER... AND ANOTHER. WHEN THEIR FATHER DIED IN 1948, IT SEEMED NATURAL FOR THE TWO YOUNG MEN TO CARRY ON THE FINE RECORD AND REPUTATION HE HAD BUILT SINCE HE STARTED THE COMPANY IN 1923.
HERE COME THE INTERNATIONALS
EVEN THOUGH WE ARE A MEDIUM-SIZE OUTFIT, THE BIGGEST, FASTEST EQUIPMENT WE CAN GET WILL CUT OUR UNIT DIRT-MOVING COSTS.
IT'S THE ONLY WAY WE CAN MEET COMPETITION, GLENN. WE'VE GOT TO HAVE A RUBBER-TIRED MACHINE TO HANDLE OUR LONG HAULS ...ONE THAT WILL KEEP MOVING DIRT WITHOUT DOWNTIME.
THEY HAD TO MAKE THE RIGHT CHOICE...SO THEY WENT RIGHT TO THE FACTORY BEFORE BUYING--
I LIKE THIS CLEAN DESIGN AND UNIT CONSTRUCTION, GLENN. IT'S SURE TO BE RUGGED.
IT SHOULD GIVE US VERY LITTLE DOWNTIME... AND BE EASY ON THE MAINTENANCE CREW. THAT LOOKS LIKE THE CHOICE.

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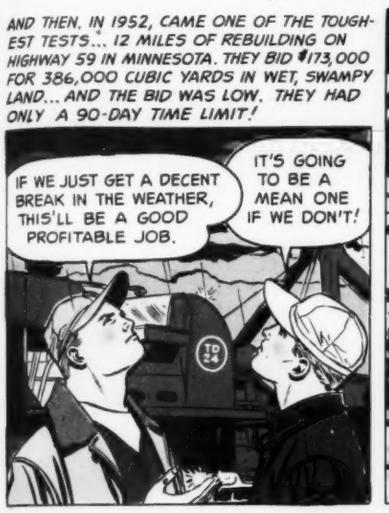
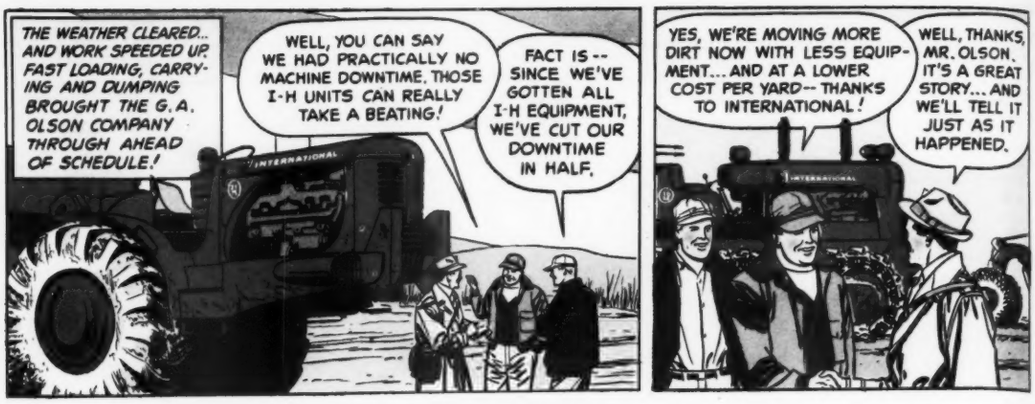
ON JOB AFTER JOB, THEIR DECISION PAID OFF. THE BIG, FAST RUBBER-TIRED RIGS WITH AN ALL-INTERNATIONAL TEAM OF CRAWLERS AND SCRAPERS--PERMITTED LOW BIDDING AND REALLY PROFITABLE PERFORMANCE... WERE USED ON MORE THAN 90% OF THE G.A. OLSON COMPANY JOBS...


AND THEN, IN 1952, CAME ONE OF THE TOUGHEST TESTS... 12 MILES OF REBUILDING ON HIGHWAY 59 IN MINNESOTA. THEY BID $173,000 FOR 386,000 CUBIC YARDS IN WET, SWAMPY LAND... AND THE BID WAS LOW. THEY HAD ONLY A 90-DAY TIME LIMIT!
IF WE JUST GET A DECENT BREAK IN THE WEATHER, THIS'LL BE A GOOD PROFITABLE JOB.
IT'S GOING TO BE A MEAN ONE IF WE DON'T!

RADIO FORECASTS MORE RAIN...AND PLENTY OF IT, GLENN.
WE'RE RACING THE CALENDAR NOW! OUR INTERNATIONALS HAVEN'T LET US DOWN YET, BRUCE. WE'VE GOT TO KEEP THEM MOVING...

AS RAIN FELL FASTER THAN THE EARTH COULD SWALLOW IT...14 INCHES IN 10 DAYS...WATER LAY INCHES DEEP ON THE HIGHWAY RIGHT-OF-WAY. ALTHOUGH THE OLSON OUTFIT WAS PINNED DOWN FOR DAYS AT A STRETCH, THEIR EXPERT OPERATORS AND TEAM OF BIG INTERNATIONALS KEPT LOADS OF SOGGY, WATER-LOGGED MATERIAL MOVING ON DAYS WHERE IT LOOKED IMPOSSIBLE...
AS THE TIME LIMIT DRAWS NEARER AND NEARER, MEN AND MACHINES PUSH HARDER AND HARDER IN THEIR BATTLE AGAINST THE ELEMENTS. AND THEN--


THE WEATHER CLEARED... AND WORK SPEEDED UP. FAST LOADING, CARRYING AND DUMPING BROUGHT THE G. A. OLSON COMPANY THROUGH AHEAD OF SCHEDULE!
WELL, YOU CAN SAY WE HAD PRACTICALLY NO MACHINE DOWNTIME. THOSE I-H UNITS CAN REALLY TAKE A BEATING!
FACT IS -- SINCE WE'VE GOTTEN ALL I-H EQUIPMENT, WE'VE CUT OUR DOWNTIME IN HALF.
YES, WE'RE MOVING MORE DIRT NOW WITH LESS EQUIPMENT... AND AT A LOWER COST PER YARD -- THANKS TO INTERNATIONAL!
WELL, THANKS, MR. OLSON. IT'S A GREAT STORY... AND WE'LL TELL IT JUST AS IT HAPPENED.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL

MAKES EVERY LOAD A PAYLOAD

Now All in One Family

the hardest-working work teams in the world!

TD-24 crawler with matched scrapers

TD-18A crawler with matched scrapers

TD-24 crawler with bullgrader

TD-9 crawler with hydraulic bulldozer

TD-6 crawler with hydraulic bulldozer

TD-14A crawler with cable bullgrader

TD-9 tractor with front-end loader

TD-18A crawler with sideboom

Model 2T-75 two-wheel, rubber-tired tractor with 18-yard heaped capacity scraper

Model 2T-75 two-wheel, rubber-tired tractor with 20-yard heaped capacity bottom dump wagon

Model 2T-55 two-wheel, rubber-tired tractor with 13-yard heaped capacity scraper

CR-611-D. 6-20. LITHOGRAPHED IN UNITED STATES OF AMERICA

another season, with a corresponding rise in costs.

Design Cuts Downtime

The entire problem of downtime is not for the contractor only. Much downtime can be prevented if the manufacturer does a better job of field testing before releasing a new design or modification. Most manufacturers use contractor operations to supplement laboratory or farm testing, and more of this is desirable. And most contractors are willing to cooperate in furnishing job conditions to help in testing equipment, for they are tired of buying equipment and then finding out that they are running development tests for the manufacturer.

Equipment Design

With competition in construction becoming more keen, contractors will want top-flight equipment more than ever. Manufacturers with equipment that is efficient and productive—and designed with the purpose of keeping downtime to a minimum—will be in a favored position. Particular attention should be paid to designing parts which cannot be assembled wrong. Gear cases can be provided with adequate and accessible drain and fill plugs and, where possible, dip sticks for checking lubricant level. These sticks should be accessible and provided with a guard so that dirt will not be knocked into the hole when the case is checked. Engine drain plugs should be accessible. Some engines now give a man a hot oil shower bath when the plug is pulled. A reduction in the number of places to be lubricated and the kind of lubricants required can help minimize downtime. Oil filters should be standardized; too many filter cartridges are needed to service present-day construction equipment.

Running out of fuel during a shift—one of the causes of downtime—can be avoided if equipment has tanks capable of holding a 12-hour supply of fuel.

Selection of Engine

Downtime could be controlled better if engines on small auxiliary equipment could be of buyers' choice so that standardization would be achieved and service and repair problems minimized. Engines on this type of equipment should have reserve power for maximum life.

Equipment should be designed, whenever possible, to permit each component to be repaired without mechanics having to dismantle or remove other components. The number of bolt sizes should be kept to a minimum, for searching for the correct wrench for odd-sized bolts adds to downtime. Another time-consuming job is fitting long or short cap screws. On large equipment that calls for assembly and disassembly, the use of large bolts or pin connections, rather than bolt clusters, can cut repair downtime.

While performance is important, simplicity of operation, maintenance, and service will help control downtime, giving the contractor the equipment performance he expects and that the manufacturer intended.

THE END

From the paper, "Downtime", delivered by the author at the 1954 Earthmoving Industry Conference of the Society of Automotive Engineers at Peoria, Ill.

Corrosion Protection For Engines and Pumps

■ A new addition to its line of volatile corrosion inhibitors has been announced by the Shell Oil Co., 50 W. 50th St., New York 20, N. Y. A feature of VPI-250 is that portions of this crystalline amine nitrite compound volatilize very rapidly, providing rust-preventing action almost immediately. At the same time, some of its constituents evaporate more slowly for longer-lasting protection. It is used in engines, compressors, and pumps, and as a rust inhibitor in hydraulic fluids.

VPI-250, a white powder about as fine as talcum, can be applied with a squeeze bottle, a salt shaker, or any similar device. Where spraying or dusting of the chemical is impractical, the powder may be dissolved in alcohol and applied in solution.

The material does not have to be applied directly to the surface it is to protect. If a quantity of the powder is simply dropped into an enclosed space, its vapor will penetrate even into hard-to-reach areas and condense on all surfaces. The minute crystalline film of VPI does not have to be removed from equipment before operation, as would be the case with grease or petrolatum.

For further information write to the company, or use the Request Card at page 18. Circle No. 30.

Truck-Mounted Crane

■ A truck-mounted crane with hydraulically controlled lift and swing is illustrated in literature from the Anderson Engineering Co., 231 Bent St., Cambridge 41, Mass. The Hydropower Runabout crane is mounted between the truck body and cab and requires only 10 to 15 inches of space. This type of mounting leaves the truck free for other work.

The crane, which uses truck engine power, has a 270-degree swing. Rope speed and swing speed are adjustable over a wide range through hydraulic control valves. One-man operation is an important feature.

The literature states that the crane has sufficiently large capacity to handle light structural steel, concrete forms, timber, pipe, and a variety of building materials. With additional equipment, including a hydraulically operated bucket, it is suitable for catch-basin cleaning.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 136.

Link-Belt Model K-595 dragline working for Strasburg Clay & Coal Company near Baltic, Ohio. Rig has 3½-yard bucket, 80-foot boom.

"Doubles cable life—cuts operating costs"

THAT's what Edward "Rusty" McGinness, owner of the Strasburg Clay & Coal Company, reports after 5000 hours' tough stripping with his TORQMATIC-equipped Link-Belt dragline.

And with the Allison TORQMATIC Converter automatically absorbing shock loads he's kept repairs to a minimum—only $24.00 in replacement parts on the drag, no repairs to the converter. The rig strips 100 tons of coal a day, uses 6 gallons of low-cost Diesel fuel an hour.

At first, Rusty was skeptical about having a TORQMATIC Converter. Now he calls it the "best unit ever made for a rig." And he should know—he's been in the coal business 15 years, has run every kind of mining equipment. Rusty reports the torque converter automatically protects cables, boom and engine from damage by absorbing sudden shocks.

There's a TORQMATIC Converter for a wide range of hard-working units from 40 to 400 horsepower. TORQMATIC DRIVES, the *matched* converter-transmission team, cut costs and boost production in trucks, scrapers, and other big equipment.

Many operators have converted their direct-drive units to TORQMATIC DRIVES to get better performance and longer equipment life. Ask your equipment manufacturer or dealer about Allison TORQMATIC DRIVES in your units. For engineering details and specifications, write direct.

Allison Division of General Motors
Box 894C, Indianapolis 6, Ind.

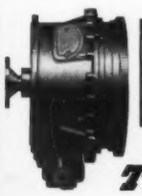
ALLISON TORQMATIC CONVERTER

Simple Design — one-piece cast converter elements — minimum maintenance

Compact, easy to install in existing equipment

Designed for power applications in the 40 to 400 hp range

Longer Equipment Life — absorbs shock, eliminates engine lugging, cuts maintenance costs



GM GENERAL MOTORS Allison TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS

Tilt-Up Wall Panels Slash Building Time

Crane and crew of five men erect 244 concrete slabs in constructing 1,209 x 314-foot warehouse

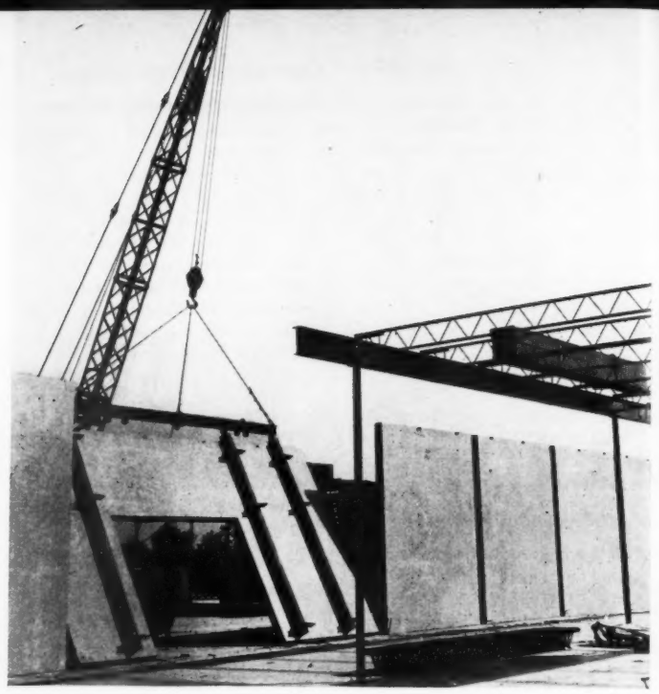
THE USE OF TILT-UP concrete wall panels in the new General Services Administration Warehouse at East Point, Ga., enabled the contractor to cut construction time by two-thirds. The building, which covers an area of 10 acres, was completed early this year. Total construction time was 6 months.

The Johnson & Johnson Construction Co., Rome, Ga., was the contractor on this job. Ready-mix concrete was supplied from the Lakewood plant of the Whitley Construction Co., Decatur, Ga.

The building is one of the largest in the nation to use the relatively new technique of tilt-up construction. It contains 244 wall panels which vary from 20 x 16½ to 29 x 16½ feet in size. Thickness ranges from 5½ to 7½ inches, and the panels weigh from 11 to 18 tons.

Specifications called for 1,800-pound strength in the panels after 7 days, but with the use of Pozzolith a strength of 1,900 pounds was achieved after only 6 days. The cement-dispersing agent produced low unit water content and the desired placeability. Most of the walls were tilted up at 6 days, with a crew of five men and a Lorain crane tilting about 12 panels in an 8-hour day.

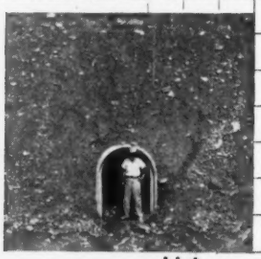
Concrete designed for the 4-inch floor slab also called for Pozzolith. Test cylinders were made at every pour by an independent testing laboratory, and results showed that none fell below the 28-day requirement of 2,500 pounds. The average pour for a slab was a section 20 feet wide by 500 feet long. This was poured and finished in 8 hours with



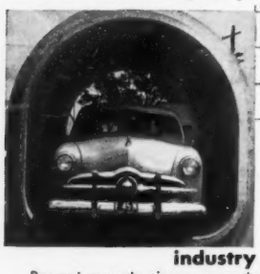
Scenes at the General Services Administration Warehouse project, East Point, Ga. The top photo shows a Lorain crane tilting up a concrete wall panel as the warehouse begins to take shape. A crew of five men erected 12 panels in an average 8-hour day. In the photo immediately above, a crew spreads floor slab concrete which is placed just ahead of the vibrating screed.

flatten cost curves with UNIVERSAL Flat-base pipe

conduits



highways



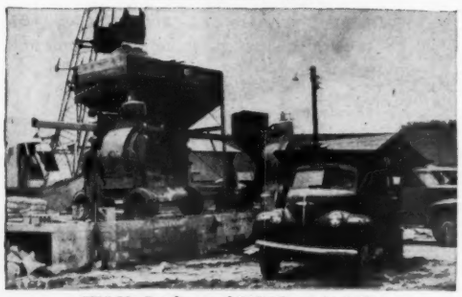
industry

Pre-cast concrete pipe saves up to 30% over built-in-place methods. Easy installation. Up to 100 feet of UNIVERSAL Flat-base pipe can be laid and covered in one day!

Built for heavy duty, low maintenance. Flatten your cost curves . . . specify UNIVERSAL Flat-base concrete pipe. Write . . . we'll tell you more.

THE UNIVERSAL CONCRETE PIPE COMPANY
297 SOUTH HIGH STREET
COLUMBUS 15, OHIO
A subsidiary of the American-Marietta Co.

CMC BIN BATCHERS AND JOB MIXERS MAKE AN UNBEATABLE COMBINATION

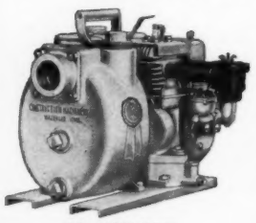


CMC Bin Batcher and 16S Mixers in Action

Whether charging an individual CMC 11S or 16S mixer or pair as shown above, a CMC Bin Batcher is the short cut to bigger profits.

Two or three compartment bins with a wide chain of travelling weighers and optional equipment. Matching bulk cement bins if desired.

CMC DUAL PRIME PUMPS ARE LIGHTER WEIGHT YET LONGER LIVED

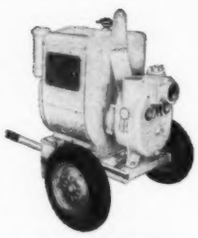


4M — 4000 G.P.H.

New dual volute design makes priming rapid, automatic and dependable. Unipacked shaft seal is protected by rapidly spinning liquid screen. Fewer parts — easier to service.

ALL SIZES

Built in all pipe sizes 1½" through 4". Other CMC Dual Primers in 6", 8" and 10" sizes with capacities to 240,000 G.P.H. Larger pumps have water cooled engines — gasoline or diesel. Also full line of electric pumps and pumps for belt drive.



40M — 40,000 G.P.H.

SOLD & SERVICED BY AMERICA'S BEST DISTRIBUTORS

CONSTRUCTION MACHINERY COMPANIES . . . . . WATERLOO, IOWA

eight finishers and ten laborers. A vibrating screed was used, together with finishing machines for a slick hard-trowel finish. On their best day, the crew placed a slab 20 x 615 feet in 4 hours.

Only two expansion joints were used in the 315-foot width of the warehouse. These were placed 20 feet inside the two opposite outside walls. Running lengthwise in the building, expansion joints were placed approximately every 100 feet. Column boxes, 2½ x 2½ feet, were spaced every 20 or 30 feet in the building.

The floor slab was cured with paper that was kept wet from 5 to 7 days. Most of the slab work was done in the open during hot weather.

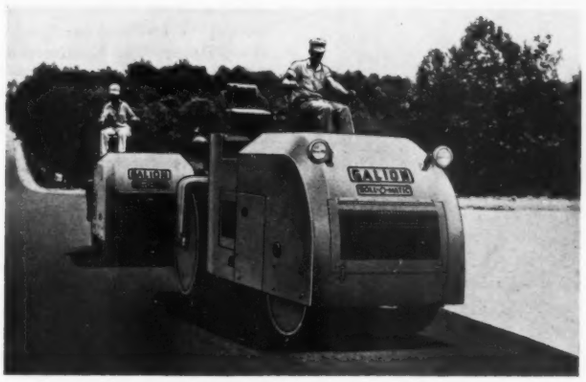
The outside foundation wall was poured 8 inches below the finished floor grade. Set into this foundation wall were two rows of dowels, one row toward the inside of the building and one row toward the outside. After the concrete had set and forms were stripped, the inside row of dowels was turned in toward the interior of the building to form a tie between the wall and the slab. The outside dowels were left upright to form a similar tie.

Robert R. Johnson was project manager for the Johnson & Johnson Construction Co. Other personnel included Austin Moses, field superintendent; Joseph Saladino, concrete superintendent; W. H. Miller, project engineer; and Jack Hughes, rigger foreman. James C. Wise, Atlanta, Ga., was the architect. THE END

Gledhill To Manufacture Elliotte Leaf Loader

The Gledhill Road Machinery Co., Galion, Ohio, has bought exclusive manufacturing and sales rights to the vacuum leaf loader, formerly manufactured by M. A. Elliotte, Grafton, N. Y., which will be added to Gledhill's line of light construction machinery for road work. The leaf loader has been sold under the trade name Sucker Upper.

Tandem Rollers With Torque-Converter Drive Can Maintain a Constant Working Speed



Four variable-weight Galion tandem rollers now feature the Roll-O-Matic drive.

■ The chief feature of the four models of Galion variable-weight tandem rollers made for the construction industry is the Roll-O-Matic drive which permits the rollers to maintain a constant travel speed, even on a grade. This combination of fluid drive and torque converter multiplies the engine driving force by means of oil in motion rather than by transmission gears.

The Roll-O-Matic drive eliminates the master clutch and gear shift mechanisms. The desired speed of the roller is selected and set by the operator by means of a control lever at the side of the seat. After the control lever is set, the engine adjusts itself to the driving power required and a uniform roller speed is maintained automatically, regardless of the grade. Rolling speeds range from .8 to 5.5 mph.

According to the manufacturer, at least 10 per cent more surface than usual can be rolled in a day because of the wide range of working speeds available, the faster reversal of rollers at the end of each pass, and the uniform speeds maintained. Fuel savings and an excess of needed power are other advantages claimed for the special drive.

The Roll-O-Matic drive also eliminates stalling and harmful engine lugging, and absorbs shock loads. It also makes effective engine-braking power available. The drive is available on 5 to 8, 8 to 10½, 8 to 12, and 10 to 14-ton Galion variable-weight tandem rollers with gasoline-engine power. The company will also continue to offer tandem rollers with clutch and gear-shift drive with either diesel or gasoline engines.

For further information write to the Galion Iron Works & Mfg. Co., Galion, Ohio, or use the Request Card that is bound in at page 18. Circle No. 79.

Pender Is Named Manager Of H. K. Porter Division

The new manager of belting sales for Quaker Rubber Corp., a division of H. K. Porter Co., Inc., Philadelphia, Pa., is W. H. Pender. With the company since 1947, Mr. Pender was field engineer for conveyor and elevator belting prior to his promotion.

Data on Combination Tagline and Hose Reel

■ A leaflet on the Rud-o-Matic combination tagline and hose reel illustrates the device at work. The crane operator works both the crane and the bucket, while the combination tagline and hose reel steadies the bucket and reels out the hose that supplies air or hydraulic power to the bucket.

Also illustrated is the Rud-o-Matic tagline, which is operated on a spring principle to steady a clamshell bucket. A combination magnetic reel and tagline, together with boomstop, are included.

To obtain this literature write to McCaffrey-Ruddock Tagline Corp., 2131 E. 25th St., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 71.

LITTLEFORD SUPPLY TANKS

Equipment with BUILT-IN ENGINEERING LITTLEFORD

for transporting bituminous materials

To keep the Spraying Units on the job the Littleford Supply Tanks haul the bituminous materials from the source of supply. These Supply Tanks are the backbone of road construction and maintenance work. They speed up the spraying work—save time and money for the Contractor or Highway Departments. Littleford Supply Tanks are made with or without pumping units and heating systems. Models range from 2000 to 5500 gal. Semi-Trailer models are made without a trailer frame; they're "frameless" constructed, giving lower center of gravity, better load distribution.

For your next road job have Littleford Supply Tanks hauling bituminous materials the modern way. Get the equipment with "Built-In Engineering".

LB LITTLEFORD

LITTLEFORD BROS. INC.
485 E. PEARL ST., CINCINNATI 2, OHIO

STOP ROOF DECK FIRES

INSULATE with PERLITE CONCRETE

New test proves that unprotected metal roof decks insulated with perlite concrete will resist fire spread at least 45 minutes! Why gamble? Include this low-cost fireproof insulation in *your* roof.

INCOMBUSTIBLE – Perlite concrete cannot burn or spread fire.

NO VAPOR SEAL needed between insulation and metal deck.* This eliminates fire hazard of bitumen on exposed steel.

MONOLITHIC – Continuous slab means no multiple cracks to leak heat or molten roofing materials.

STURDY – Mesh-reinforced perlite concrete stiffens deck, shields roofing from flames even after metal deck is buckled by fire.

PERMANENT—Perlite concrete won't "give" under ordinary traffic, can't rot or decay.

PROVEN FIRE RESISTANCE

200°F ON ROOF

1650°F INSIDE

Flames failed to penetrate a metal deck insulated with perlite concrete in a 45-minute fire test. Final average temperatures are shown above. Write for complete test data.

U-VALUES FOR PERLITE CONCRETE (1:6 MIX) ON METAL DECK WITH ROOFING:

Thickness	2"	2½"	3"	4"
U-value	.222	.186	.160	.126

*FOR TECHNICAL DATA write for 43-page report: "Vapor Diffusion and Moisture Migration through Perlite Concrete," by Prof. C. E. Lund. $1.00 per copy. Sorry, cannot bill – please send cash or check with order.

PERLITE INSTITUTE
10 E. 40th Street
New York 16, N. Y.

The new rubber-tire-mounted Blaw-Knox paver-finisher has been operated at speeds in excess of 54 feet per minute.

Rubber-Tire-Mounted Bituminous Paver Has Speed and Traction

■ A high working speed is one of the advantages of the rubber mounting on the new Blaw-Knox bituminous paver-finisher. The machine has a maximum working speed in excess of 54 fpm and a travel speed of 4½ mph. According to the manufacturer's report, the rubber mounting also prevents spin, weaving, or side slip in turning and steering. A third advantage is that it reduces vibration from the tampers, relieving strain on the structural and frame parts.

Three solid-rubber tires are on each of the two front hydraulically controlled steering wheels. There are also two mid-section-mounted pneumatic traction wheels on each side.

The machine has dual controls, with almost all of them hydraulic, except for the manually operated calibrated controls used to regulate through adjusting screws the desired depth of material. Courses can be laid in widths from 8 to 13 feet in depths up to 10 inches.

Located in the base of the receiving hopper and operated separately or in unison, are chain-driven bar-type conveyors. These move material through the hopper and discharge it ahead of the screed. Flow control is provided through gates near the discharge end of the hopper, one for each side of the machine. These can be raised or lowered manually.

The angle of the equipment's floating screed can be changed by the manually operated index wheels on each side of the machine. The tamper bars, of which there are only two, are located just ahead of the leveling screed and are actuated by eccentric journals. A blower-type screed heater, started by means of a push-button located near the operator, extends the full width of the screed box and provides even heat.

Although technically known as a bituminous paver-finisher, using material in hot and workable condition, this newest piece of Blaw-Knox highway construction equipment will handle any type of asphaltic or tar mix, either hot or cold, in sand mix, or in mixes involving heavy aggregates.

For further information write to the Foote Construction Equipment Division, Blaw-Knox Co., 1916 State St., Nunda, N. Y., or use the Request Card at page 18. Circle No. 120.

Need information on new equipment? See card at page 18.

Bulletin on New Equipment For Land-Clearing Work

■ A specialized approach to land clearing is described in a bulletin from R. G. LeTourneau, Inc., Longview, Texas. The booklet describes the company's new heavy-duty land-clearing equipment which is electrically controlled and operated.

Le Tourneau land-clearing machinery is recommended by the manufacturer for right-of-way clearing as well as for preparation of thickly wooded wasteland for construction or agricultural use. Results achieved near Texarkana, Texas, where the equipment is being used to clear 16,000 acres of wooded land for a flood-control reservoir, are presented as evidence that contractors using this new type of equipment can make large-scale land clearing into a specialized new field.

Much attention is devoted to the LeTourneau tree saw and the LC tractor. Both machines are diesel-electric powered and are mounted on four wide-base rubber-tired LeTourneau electric wheels. The tree saw is a mobile self-powered machine equipped with a large-diameter (up to 10 feet) circular saw at the end of a movable boom. This powered saw reportedly cuts any tree in a matter of seconds and controls the direction of fall by an overhead pusher boom. The LC tractor works in cooperation with the tree saw and is shown clearing small brush and stacking into windrows the larger trees felled by the tree saw.

Also pictured in the bulletin is the LeTourneau disk harrow, a

HOW THE MAIN FRAME CONTRIBUTES TO TOP TRACTOR PERFORMANCE

All-Steel Box A-Frame is a Key to Outstanding, Low-Cost Record of Allis-Chalmers Tractors

Contractors all over the country are putting new emphasis on shrewd equipment buying. And rightly so. To win bids, stay on schedule and make a profit in the face of today's keen competition, they have to be *sure* of getting top value in design, performance and service features.

More and more of these contractors are now using Allis-Chalmers tractors. One of the big reasons is hidden in the heart of the tractor. It's the exclusive design which characterizes the main frames of all four Allis-Chalmers tractors. These frames are one-piece, all-steel, welded structural members (like the girders in a bridge or the columns in a building). They help provide greater strength and flexibility to withstand shock loads, better equipment mounting, improved weight distribution and outstanding service simplicity.

We invite you to see these advantages . . . first at your nearby Allis-Chalmers dealer, and then in a demonstration. Whichever size you may be interested in, you'll see a tractor that is not just modified . . . but designed new-from-the-ground-up to meet the needs of today's jobs.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

heavy-duty implement drawn by the LC tractor and designed especially for breaking up newly cleared virgin land.

One of the pages of Bulletin No. 21 is a cost-analysis sheet. On it, the necessary information can be developed for figuring ownership cost and operating cost of a LeTourneau tree saw.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 87.

Booklet on Belt Conveyor

■ A portable belt conveyor is shown in literature from the Mar-Rail Conveyor Co., Pawtucket, R. I. The Brik-Toter, available in stock sizes of 20 to 40 feet in length, has a 12-inch-wide belt of three-ply rough-surface rubber. Its distributed load capacity is 1,200 pounds. The conveyor offered can be driven with either an electric motor or a gasoline engine.

A feature stressed in the literature is the steel-truss construction of the conveyor, which needs no additional support. Other advantages are portability and the self-operating design, which makes it possible for a conveyor crew of only two men to feed and unload the belt. The conveyor handles all types of materials including brick, stone, concrete and cinder blocks, slabs, and plaster and mortar in special buckets. With a bulk material attachment, it carries sand, gravel, and other bulk materials.

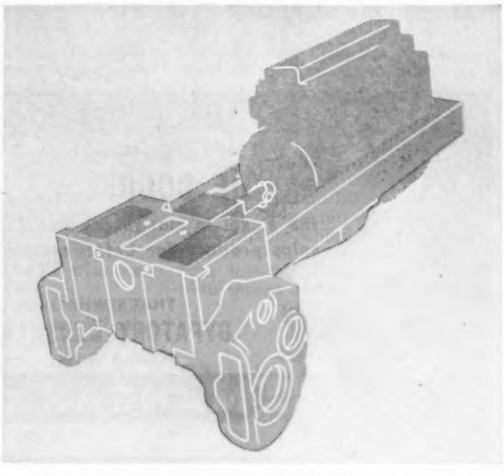
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 137.

The new Ingersoll-Rand Drillmaster.

"Rolls with the Punch" — The resiliency of the high-tensile steel main frame enables it to flex slightly under extreme shock loads . . . without transmitting the strain to engine, clutch or transmission . . . thus offering extra protection to the complete machine.

Weight Distribution Designed for Today's Jobs— Box A-Frame lets Allis-Chalmers use a modern engine . . . locate main parts for best over-all balance . . . put more weight lower in tractor where it does the most good . . . make the tractor "built to take it."

Better Equipment Mounting — Designed to best serve changing tractor application (today over 70 percent of all tractor equipment is mounted), this compact main frame allows bulldozers to be mounted in close . . . provides ample clearance for equipment like front-end shovels . . . permits wide track shoes . . . improves performance of the entire unit.



Unit Construction for Service Simplicity — Since the main frame carries the *structural* load, power drive components are designed to do only their specific jobs. They can be readily removed, repaired or replaced without disturbing adjacent parts . . . saving service time . . . actually cutting down time because assemblies can easily be serviced under shop conditions if desired.

HD-20
Weight 41,000 lb
Hydraulic Torque Converter Drive
175 net engine hp

HD-15
Weight 28,000 lb
Choice of standard transmission or hydraulic torque converter drive

HD-9
Weight 18,800 lb
72 drawbar hp

HD-5
Weight 11,250 lb
40 drawbar hp

New Twin-Drill Rig Is Crawler-Mounted

■ A new self-contained and self-propelled twin-drill rig suitable for heavy-duty wagon-drill-type jobs is announced by the Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y. The integral unit includes two hydraulic booms, two 10-foot wagon-drill towers, two heavy-duty X-71-WD rock drills, a crawler assembly, and a 600-cfm Gyro-Flo rotary compressor.

The crawler-mounted Drillmaster rig is said to be suitable for drilling rock on highway work, railroad right-of-ways, airports, hydro-electric power developments, canals, and general construction. It can be used in quarries for putting down primary blast holes or for toe-hole work. The booms can be side-mounted on the unit. The manufacturer claims that the machine, which requires two operators, will do work equivalent to that of three wagon drills.

Using drills with an 8-foot steel change, the Drillmaster will drill holes up to 18 feet 6 inches between centers. Moving speed is 2 mph on level ground, and the unit will negotiate a 15 per cent grade.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 51.

Small Power Rollers

■ A folder on its line of power rollers for maintenance or light contracting work is available from Consolidated Industries, Inc., Mixville Road, West Cheshire, Conn. This new folder features the Con-Sol power roller line.

The standard model, with weight adjustable between 300 and 1,200 pounds, is recommended for rolling grounds and for patching driveways. The all-purpose model, with weight adjustable between 375 and 1,400 pounds, is used by contractors for laying asphalt and other hot-mix surfaces on driveways, sidewalks, parking lots, and for many other rolling jobs. This model is equipped with a sprinkler tank.

Available as extra equipment for either model is a caster-type roller which may be substituted for the rear roller and sulky.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 57.

AVOID LEGAL PITFALLS

Edited by **A. L. H. STREET**
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Government Delayed Material Delivery

THE PROBLEM: *A lump-sum contract to construct water-treatment facilities at an army camp required completion within 61 days, with the government furnishing most of the pipe, fittings, and valves needed. Was the government liable for additional cost of performance because of its delay in furnishing the material?*

THE ANSWER: Yes. (Chalender v. United States, 119 Fed. Supp. 186, decided by the United States Court of Claims.)

The court, however, determined that only half of the 71-day delay claimed by the contractor was due to the fault of the government.

The government argued that no damages were assessable because it was not possible to determine precisely the amount of damages sustained by the contractor because of the delay. The Court of Claims replied that, while no damages can be awarded for breach of contract obligations when it is a matter of speculation whether any damage had been sustained, an award will not be denied when damage is definitely proved, although it may be possible to fix precisely the amount of actual loss.

It was incidentally decided that when the government agreed to furnish the materials mentioned, it impliedly bound itself "to furnish them in time to be installed in the ordinary and economical course of the performance of the contract".

Oral Agreement Was Enforceable

THE PROBLEM: *In New York, as in most other states, there is a statute to the effect that an agreement that is not to be completely performed within a year is not binding unless there is a signed written contract. Allegedly, defendant, a general contractor, orally offered to pay plaintiff a commission for introducing prospective customers for construction jobs. Was the agreement enforceable in view of the fact that there was no written contract?*

THE ANSWER: Yes. (Bakers Equipment Corp. v. Barbarino, 128 N. Y. Supp. 2d 903, decided by the New York City Municipal Court, Brooklyn.)

The arrangement could be terminated at will by either party. Plaintiff was not bound to furnish prospects, and defendant did not have to bid on jobs spotted by plaintiff. So, the contract could be discharged within one year. The fact that the arrangement might continue beyond a year made no difference. Hence, plaintiff was entitled to commissions on jobs procured by defendant through plaintiff's efforts.

Wall Cracks

THE PROBLEM: *Defendant built a foundation for plaintiffs, who let construction of a house to another contractor. Cracks developed in the brick walls, but there were no cracks in the foundation, which had settled only ⅜ inch. Expert witnesses testified that the building was not built according to plans and specifications. Was defendant liable?*

THE ANSWER: No. (Tova v. Thompson & Whitty, Inc., 69 So. 2d 364, decided by the Louisiana Supreme Court.)

The court, after considering all of the evidence, decided that the wall cracks were not due to faulty construction of the foundations, although an architect had testified that they they were so caused.

Lessor's Liability For Equipment Defects

THE PROBLEM: *A grading contractor hired a skip loader for use on a hillside job. It rolled backward and over a declivity, injuring the contractor. Was the lessor of the equipment liable for the injury?*

THE ANSWER: Yes, if the brakes were defective and the lessor negligently failed to inspect the loader before turning it over to the contractor and if the defect was not apparent to the contractor when he received it. (McNeal v. Greenberg, 251 Pac. 2d 49, decided by the California District Court of Appeals, Second District, Division 1.)

The court observed that the case came within these well established rules of law recognized by the courts throughout the country: A lessor of a machine is ordinarily liable for injury caused in its proper use if he has neglected to make the machine safe and has failed to disclose

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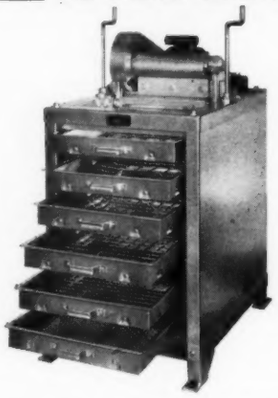

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to the lessee the risk involved. The lessee cannot be expected to make more than a cursory inspection. These rules apply especially to those engaged in the business of leasing such machines.

Low Bidder Loses

THE PROBLEM: *The low bid for constructing a municipal swimming pool was $153,631 for completion by August 31. But the city awarded the contract on a bid of $157,275 for completion by July 1. Was the legality of the award reviewable by a court at the instance of the low bidder, under a Wisconsin statute which requires all public construction at an estimated cost of more than $1,000 to "be let by contract to the lowest responsible bidder"?*

THE ANSWER: No. (State ex rel Hron Bros. Co., Inc. v. City of Port Washington, 62 N. W. 2d 1, decided by the Wisconsin Supreme Court.)

In this very recent case, the court followed a decision rendered 85 years earlier, to the effect that whatever may be the rights of complaining taxpayers in such cases, "the lowest bidder, whose bid has been rejected, has no absolute right" to compel "the execution of a contract with him, after one has been let to another".

However, intimating that the court would not have interfered in this case, even at the instance of a taxpayer, the court noted that there can be no judicial interference with a municipal council's or board's exercise of reasonable discretion to determine which is the lowest responsible bid.

It may be inferred from the court's opinion that the fact that the lowest bidder offered to complete the swimming pool by August 31, when the swimming season would be almost over in Wisconsin, and the accepted bid offered to complete by July 1, when the season would be just beginning, would at least partly justify the award at a $3644 higher price.

Careless Haulage on Roads

THE PROBLEM: *A levee contractor's employees allowed dirt and mud to fall from trucks to a highway, rendering the road slippery due to rain, and a motorist was injured when his car skidded into the ditch while being carefully driven. Since no attempt had been made by the contractor to warn motorists of the danger, could he be held liable in damages?*

THE ANSWER: Yes. (Smith v. Markham, Brown & L. L. Sanders, 61 So. 2d 515, decided by the Louisiana Court of Appeals, Second Circuit.)

Contract Is Good Though Sloppily Drawn

THE PROBLEM: *Obviously, carelessly drawn contract documents invite costly litigation and possible defeat in the courts. But if the mutual intention of the parties can be detected, will the courts disregard "cockeyed" phrasing?*

THE ANSWER: Yes. (Pierce v. Wright, 256 Pac. 1049, decided by the California District Court of Appeals, First District, Division 1.)

The court decided that odd phrasing, due to trying to adapt to personal suretyship on a private job a standard performance bond form intended for signing by corporate sureties and covering public works contracts, did not afford the surety an escape hatch when the contractor absconded.

Accident at Private Railroad Crossing

THE PROBLEM: *Flood-control project contractors secured a license to build a private crossing over railroad tracks for use in hauling heavy equipment. The railway company furnished a crossing flagman, and the contractors agreed to pay all damages for personal or property injury arising out of use of the crossing. The flagman was injured when struck by the contractors' earthmover. Were the contractors bound to reimburse the railroad company for expenditures for hospital, medical, and nursing care given the injured man?*

THE ANSWER: Yes. (Chicago & North Western Railway Co. v. Kramme, 59 N. W. 2d 204, decided by the Iowa Supreme Court.)

Claim by the flagman against the railroad company and the contractors for his injuries was compromised.

Road Contractor's Right As to Injury of Employee

THE PROBLEM: *Employees of a state highway contractor were injured through negligent operation of a bush-cutter by an employee of the state highway commission. The contractor was required to pay workmen's compensation to the injured men. The contract provided that the contractor would indemnify the state and the commission against claims for injuries "sustained by or from the contractor and his employees in doing the work." Was the contractor entitled to reimbursement by the highway commission?*

THE ANSWER: Yes. (Denaco v. Blanche, 90 Atl. 2d 707, decided by

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(Continued from preceding page)

the Maine Supreme Judicial Court.)

The court said that if the bush-cutting machine had been used in connection with the contract work, the commission might not have been liable, but it was used on work done by the commission independently of that job.

Checks "In Full"

THE PROBLEM: *A contractor sent a check to a bank for a sum that was less than actually due but bearing a notation that it covered payment in full. Did the bank's retention of the check prevent it from compelling payment of the amount actually due; there being no reasonable ground for disputing that amount?*

THE ANSWER: No. (First National Bank of McGregor v. Collins, 266 S. W. 2d 506, decided by the Texas Court of Civil Appeals, Austin.)

Bond Did Not Cover Labor and Materials

THE PROBLEM: *A housing project contractor gave a Massachusetts statutory bond for the benefit of labor and material claimants. Could a furnisher of labor and materials collect on the bond where no sworn statement of claim had been filed as required by the statute?*

THE ANSWER: No. (Philip Carey Mfg. Co. v. Peerless Casualty Co., 113 N. E. 2d 226, decided by the Massachusetts Supreme Judicial Court.)

The court drew a distinction between a bond given to protect labor and material claims without being required by statute and a bond given under a statute which requires a formal claim to be filed before recourse can be had against the bond.

Road Contractors Not Liable for Accident

THE PROBLEM: *On a new state road, a concrete extension slab extending along one side about 200 feet from a bridge, tapered from 3 feet to 14 inches in width. Beyond was a back-filled shoulder of sand and gravel. A serious accident occurred when a car skidded on the shoulder after running off the slab. The work was done according to contract and had been accepted several weeks before the accident. Were the contractors liable on a theory that they had left the road in a dangerous condition?*

THE ANSWER: No. (Reynolds v. Manley, 265 S. W. 2d 714, decided by the Arkansas Supreme Court.)

In a noteworthy opinion in which similar cases are discussed, the court reasoned:

As a general rule, where construction has been completed and accepted, the contractor is not liable for injuries to third persons, even if they have been injured by a defective condition in which the contractor left the work. But there are two exceptions to the rule. There is liability if the defect in construction was concealed, and so was not discoverable in the inspection made before the job was accepted, or if the work was turned over in an imminently dangerous condition.

The court referred to its decision in an earlier case where a bridge contractor was exonerated from liability for an accident which resulted when flooring was left unnailed. (Canal Construction Co. v. Clem, 163 Ark. 416, 260 S. W. 442, 41 A. L. R. 4.)

In the present case, the court rejected a contention that the road contractors were liable because sand and gravel were used in constructing the shoulder and because it was compacted by rubber-tired trucks instead of by a heavy hammer. The work and material conformed to contract requirements; but even if they had not done so, the contractors were not liable because the job had been performed in the presence of state highway department officials, if not under their direction.

The contention that the shoulder was imminently dangerous when the road was completed was disproved by the fact that about 200,000 cars had passed over the section after its acceptance and before the accident—apparently without mishap. Ruts in the shoulder showed that some of the cars had gone off the end of the slab at the same place. If the spot was defective, it was the state highway department's fault in not properly maintaining the shoulder after the road was accepted.

If contractors were to be held liable in such cases, "it would force them to demand such exorbitant prices as to make further road construction impossible, and it is not apparent at what point of time such liability would cease."

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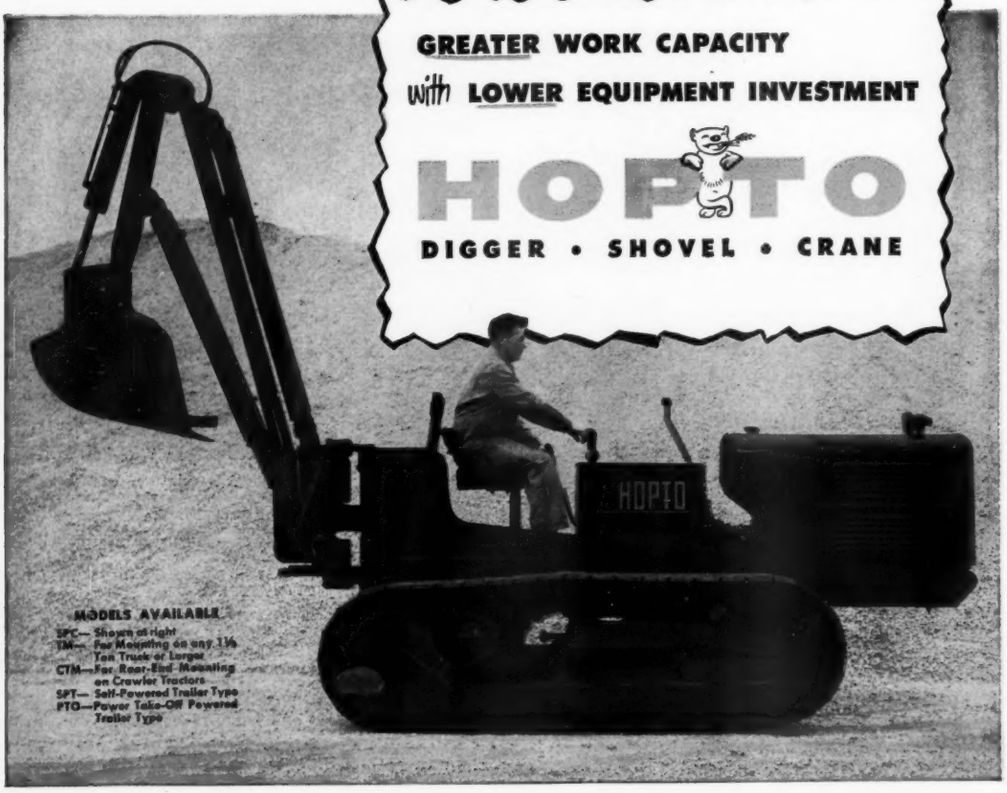
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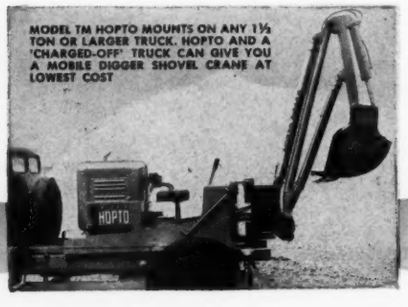
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The 3½-hp Model AH-80 is one of two new one-cylinder air-cooled Power Products engines.

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Both models are made with ball bearings at both ends of the crankshaft, with the crankshaft induction-hardened at the rod bearing surface. A connecting rod of forged steel with needle bearings is standard on the larger model. On the smaller model, in which bearing bronze is used, the rod is available optionally. A positive fly-ball governor and a positive, mist-type lubrication through premixed fuel are other specifications.

For further information write to the company, or use the Request Card at page 18. Circle No. 121.

Concentrated-Steam Unit For Cleaning Machinery

■ A new unit that offers both steam cleaning and the hydraulic scrubbing necessary for heavy-duty machinery cleaning is shown in literature from the Livingston Engineering Co., 100 Grove St., Worcester 5, Mass. The Hydrasteam Jet cleaner features the advantages of both the Speedylectric Steam Jet and the Sellers Injector Hydraulic Jet.

The Steam Lance feature, according to the literature, provides pinpoint cleaning under fingertip control of the operator and can also be used for applying concentrated undiluted solvents, detergents, or stripping agents to soften and loosen accumulations or coatings. Manually controlled force removes all grease and soil deposits.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 138.

Brunner & Lay Service

Brunner & Lay products and Westland Equipment Co. service have been combined by Brunner & Lay Corp., Franklin Park, Ill., to give improved service to the market in the Pacific Northwest. The general manager in charge of Brunner & Lay Corp., Westland Division, Portland, Oreg., is Irving H. Rauw. Stocks of all Brunner & Lay pneumatic tool accessories, carbide Rok-Bits, and Westland drill steel are available now for shipment.

Rotary Sweeper Cores

■ Literature on its expanded line of rotary-sweeper cores is available from the Van Brush Mfg. Co., 327 Southwest Blvd., Kansas City 8, Mo. The company makes cores for Grace, Hough, Rosco, Littleford, Fordson, Lull, Detroit-Harvester, Meili-Blumberg, and many other sweepers.

The literature lists cores with three types of fillers: steel wire, Bass fiber, and India Palm fiber. The spring-steel wire fillers have long wearing qualities, while the Bass fiber is preferred where sweepings are comparatively light in weight. The India Palm fiber filler, coarse and stiff in texture, is often used for refills.

Another line of products illustrated is the company's Peckerwood drag booms, including the newly added Little Peckerwood continuous drag.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 139.

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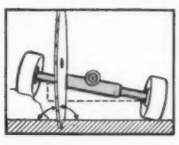

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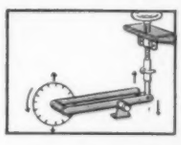

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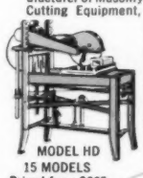

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Following a water truck which moistens the base-course material, this Seaman Trav-L-Plant quickly blends the aggregates in three passes on an airstrip-lengthening job at Nellis Air Force Base, Nevada. *Ray Day Photo*

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Soil blending and compaction feature base-course work

MOVING INTO NELLIS Air Force Base, Nevada, for subbase and base-course work on two runway extensions and overrun strips, Gibbons & Reed Co., Inc., Salt Lake City, Utah, found itself matched against a powder-dry ground which threatened to defy compaction. In this hot semiarid desert country, optimum dry-weight densities showed a variance of from 108 to 132 pounds per cubic foot—an abnormally wide range for this material. Helping the company lick this difficult dirt assignment was a Seaman Trav-L-Plant, which blended materials quickly and thoroughly and helped rollers to achieve high-density compaction.

The current paving job at Nellis—"The Tiger's Den"—is designed to improve ground headquarters for the jet pursuit planes based there. One of the busiest fields in the country, Nellis handles more air traffic annually than New York's LaGuardia airport. Every 20 seconds in a 10-hour day, 365 days a year, the runway is hit with new activity.

The two runway extensions, designed for the Los Angeles Office of the U. S. Army Corps of Engineers by Koebig & Koebig, engineering firm of that city, will be able to handle advanced jet aircraft with tire pressures of 200 psi. Both runways have been designed along the same lines, differing only in width. One is 150 feet wide, the other, 200 feet wide. The shorter runway is being lengthened by a half mile of new asphaltic concrete construction for its entire width, 1,000 linear feet of portland-cement concrete, and 1,000 feet of specially graded overrun. The overrun is being covered for 250 feet past the concrete pavement with 2 inches of asphaltic concrete surfacing on 6 inches of special aggregate subbase. The portland-cement section consists of 10-inch plain concrete pavement, the edges of which thicken to 13 inches. There is no select granular subbase under this pavement. Native soil has been compacted to 92 per cent for the upper 6 inches and 90 per cent down to natural ground.

The asphaltic concrete pavement consists of a 1½-inch base course and a 1½-inch surface course. It is underlaid by a high-type granular subbase composed of 8 inches of select gravel and 6 inches of crushed aggregate. Both materials required 100 per cent compaction, which meant a near-perfect blending of materials and a uniform distribution of about 8 per cent moisture.

Gibbons & Reed Co., Inc., holder of the U. S. Army Corps of Engineers contract for the extensions and overrun strips, did all earthwork, subbase construction, and portland-cement concrete paving. Asphaltic concrete work was subcontracted to Ideal Asphalt Paving Co., Las Vegas, Nev.

Advance dirt forces and equip-

(*Concluded on page 74, col. 3*)

A Tampo roller, owned by the asphalt paving subcontractor, Ideal Asphalt Paving Co., is used by Gibbons & Reed, prime contractor, to compact the granular subbase to the required density. *Ray Day Photo*

PULL SPROCKETS IN MINUTES

WITH THE NEW OTC SPROCKET PULLER

Pulling International TD-24 sprocket with OTC 50 Ton Set.

Portable OTC 50 Ton Hydraulic Ram with Adaptors Pulls or Installs on the Job or in the Shop

OTC 50 Ton POWER-TWIN Hydraulic Ram may be used for hundreds of tough pulling and installing jobs including the above.

Sets For Caterpillar, Allis-Chalmers and International Harvester

Save Time, Labor—Reduce "Down-time." Now for the first time the tough, time consuming, costly job of pulling industrial tractor sprockets can be done in minutes by one man with the new OTC 50 Ton Ram and adaptors. Sets are available for each make shown above or a Universal Set to fit all three makes . . . If you have a 50 Ton OTC Ram, you need only the adaptors. Three types of pumps are available . . . For complete information write your jobber or Owatonna Tool Co. giving make of tractor used.

Ask about OTC Hydraulic Universal Puller Sets too!

SEND FOR FREE FOLDER

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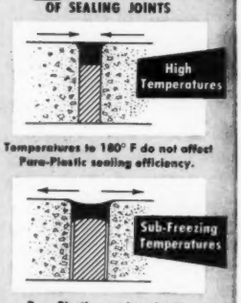
STOP JOINT SEAL FAILURES!

Use HOT-POURED *Para Plastic*

- *Para-Plastic keeps joints sealed under severest conditions of traffic, temperature*
- *May be pumped directly into joint from melting kettle*
- *Para-Plastic "JF" compound impervious to Jet Fuel or petroleum solvents used in aircraft*

Use Hot Poured Para-Plastic . . . field-proved to be the only effective method of sealing joints with a high degree of permanence. There's no substitute for Para-Plastic . . . nothing equals its sealing performance. It's stable, constant in volume, won't break down and maintains bond under virtually every condition. Para-Plastic can now be pumped directly into the joint from the melting kettle—a fast, simple method of application. Write for details on new method and information on Para-Plastic and Para-Plastic JF.

The only FIELD PROVED METHOD OF SEALING JOINTS



Temperatures to 180° F do not affect Para-Plastic sealing efficiency.

Para-Plastic remains plastic—maintains bond at 0° F.

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Are Laid
Je Aircraft

Asphalt and concrete extend runways at Nellis air base

The 1,000-foot-long portland-cement concrete sections are laid in 25-foot lanes by a Rex 34E paver. A Blaw-Knox machine spreads the concrete between the forms.

The half-mile asphalt section, subcontracted to Ideal Paving Co., Las Vegas, Nev., is compacted to 96 per cent density by a Buffalo-Springfield roller. *Ray Day Photos*

EMPHASIS was placed on fast and efficient paving through the entire job at Nellis Air Force Base. The 1,000-foot-long sections of portland-cement concrete on both runways are 10-inch uniform pavement, laid in 25-foot lanes without reinforcement. Only the edge lanes are thickened to 13 inches, and these are keyed to other strips by 16-inch dowel bars on 12-inch centers. Standard longitudinal key-type joints, bolted to the side of the forms, key the 10-inch lanes.

Outside lanes were poured first, a center lane next, and alternate strips were put down to complete the concreting. A total of 2,400 linear feet of Heltzel 10 x 10 steel forms was used on the job.

An unusual feature was the establishing of grades with the bottom rather than the top of the forms. This was done with small concrete pads which were set to perfect grade before forms were placed. The base of the forms was hand-tamped slightly to insure a firm bearing against the subgrade. Generally, forms were kept 500 feet ahead of the paver. Forms were held firmly at ground surface by 30-inch pointed steel stakes, driven through the subbase with a Chicago Pneumatic pin-driving gun supplied with air by a 105-cfm Le Roi compressor. Excess material was removed by a shop-built planing device pulled by a motor grader. String lines and a template with teeth were used to check the grade.

Instead of conventional expansion joints, ⅛ x 2½-inch contraction grooves were placed in the pavement by steel wedges or a Felker Di-Met single-blade saw. The saw produced about 2,200 to 2,600 linear feet of joint per blade. With the arrival of hot weather, joints were sawed shortly after the strip was paved. Concrete placed prior to 4 p. m. was sawed at 8 p. m. the same day. Hunt Process Co., Los Angeles, did the sawing and filling, as well as curing work.

Arlie Flanders, assistant superintendent in charge of concrete, used a Rex 34E paver on the runways, bunching paving equipment unusually close because the hot weather caused the concrete to set up rapidly. The paver handled 1¼-cubic-yard batches, and mixing water came from the same supply hydrant which furnished water for the earthwork. Two 2,000-gallon truck-mounted tanks hauled water to the paver and dampened the subgrade ahead of the lineup. Concrete was placed at a slump of about 2½ inches.

The first machine in the lineup was a Blaw-Knox spreader which mounted two Dart vibrators at the rear for consolidating concrete at the edge of the lane. Working close to the spreader was a Jaeger-Lakewood horizontal float-finisher having enough tamping action to sink large aggregate particles down into the concrete. Following the Jaeger longitudinal float, which put a mechanical finish on each lane, were cement finishers using edging tools and long-handled longitudinal finishers. After a final finish with a pulled belt, the concrete was cov-

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American Hoist & Derrick Co.
St. Paul 1, Minnesota

For safety on the job, the working capacity of each block is embossed on the side plates.

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AIR HAMMER AND PNEUMATIC TOOL

Compact, soundly engineered, exceptionally powerful, the Dotmar AirMite is as easy to hold as a pistol . . . weighs only 3½ lbs., only 7" long, less fatiguing. Many safety features. Ideal for boring holes in concrete or masonry, cutting and trimming sheet metal, riveting, flattening, peaning, caulking and a hundred other uses. Can be operated with small, portable 1 h. p. compressor, with air pressure as low as 40 lbs. Available with wide range of tools. AirMite is yours at surprisingly low cost . . . will give years of economical, efficient service. Write for Bulletin 154 today!

DOTMAR CURB AND GUTTER PAVER

With NEW Mechanical Tamping Attachment, which eliminates one man, assures more uniform structure and enables paver to run at faster speeds, the Dotmar Curb, Gutter and Sidewalk Paver is more than ever a true profit-maker. Pays for itself the first mile of paving. Is available with screeds for all standard curb and for integral gutter, curb and sidewalks up to 6' wide. Ends paving bottlenecks, is economical to own and operate! Send for Bulletin 53!

Dotmar INDUSTRIES Inc.
528 HANSELMAN BUILDING - KALAMAZOO, MICHIGAN

ered with Hunt Process pigmented curing solution. Twelve hours after concrete was placed, the pins were pulled and the forms removed.

A Wagner loader with hydraulic hoist pulled the pins neatly from the forms. The stripped form sections were then stacked and carried ahead to the next setup by the fork lift on the machine.

Concrete Mix

Concrete mixing was done by a California batcher set up at one end of the field, about a mile and a half from the work. Five 10-wheel Mack trucks, capable of hauling six 1¼-yard batches per trip, served the plant. Two Kenworth and two GMC long-range trucks and trailers were also used to haul bulk cement. Trucks and trailers were used to transport portland cement 300 miles between the base and Riverside, Calif., where the material was supplied by Riverside Portland Cement Co.

Three sizes of material were used: 2 to ¾-inch; ¾ to ¼-inch; and sand. These were hoisted to the charging bins by a Northwest crane equipped with 72 feet of boom and an Owen 1½-yard clamshell bucket. Aggregates were supplied by Las Vegas Building Materials Co., and hauled by its trucks 14 miles to the batch plant. The plant was set up so that trucks could drive directly through and be on their way to the job site just as soon as they received their loads.

Hot-Mix Pavement

About 40,000 tons of bituminous material was called for in the subcontract held by Ideal Asphalt Paving Co. on the 250-foot-long overrun. The company averaged 850 tons of material in 8 hours. The design of the mix for binder and surface course was:

Sieve	Per Cent Passing Binder Course	Surface Course
1 inch	100	
¾-inch	95	100
½-inch	76	96
⅜-inch		84
No. 4	43	65
No. 10	30	47
No. 20		35
No. 40	18	29
No. 80	11	17
No. 100	5	4.5
Asphalt (85-100 pen.)	4.5	6.3

Mineral aggregate was produced by the paving contractor at the hot-plant site, about four miles from the field. Finished materials were stockpiled over a long recovery tunnel which was tapped by gates to allow a perfect blend of raw materials to go into the plant. A Standard 4,000-pound machine was used, capable of turning out the 3-bin separation specified. Asphaltic cement of 85 to 100 penetration was trucked from the McMillan Petroleum Co. refineries in Los Angeles. Both courses were laid by a Barber-Greene tamping-leveling finisher. A Buffalo-Springfield 3-wheel machine was used for the knockdown roll, a Buffalo-Springfield 3-axle tandem for longitudinal and cross rolling, and a Tampo rubber-tire unit aided both machines. Specifications called for 92 per cent of theoretical density on the binder course and 98 per cent of Marshall laboratory compaction on the surface course.

The top course, after being rolled with a Buffalo-Springfield 15-ton and a Tampo roller, was compacted to an average 96 per cent. To achieve the required density, a 50-ton pneumatic-tire Southwest roller with 100-pound tire pressure was used. Compaction came to 98 per cent after the roller made 12 to 18 passes on each strip.

Personnel

The U. S. Air Force complement at Nellis is headed by Brig. Gen. James E. Roberts, commander of the 3595th Training Wing. He worked in close cooperation with the Los Angeles District of the U. S. Army Corps of Engineers, commanded by Col. Arthur H. Frye, Jr., district engineer. Field work was under the supervision of William J. Leen, chief of the construction division, with Oliver E. Ochsner in charge of the military construction program. Field operations were under the direction of Beattie C. Hendrick, project engineer. THE END

(Continued from page 72)

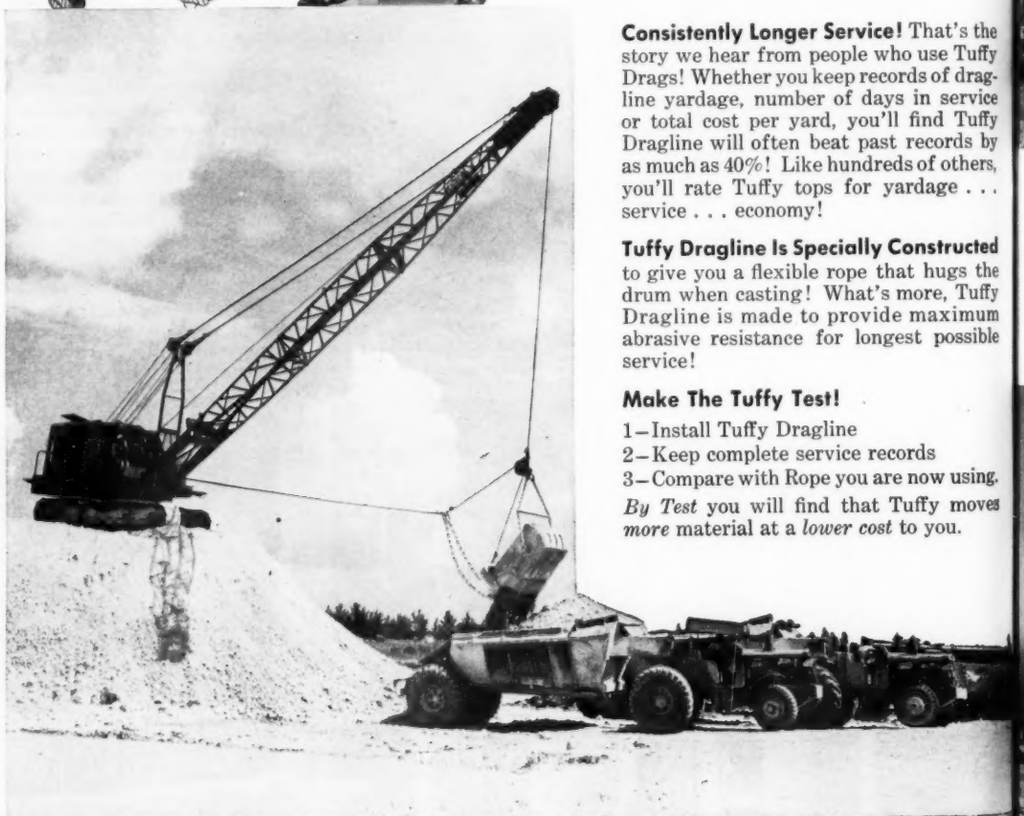
ment went into the field in early January under the management of Lee Bryner, who is general superintendent for the company in Utah. Assisting him as excavation foreman was David Warnick. Three LeTourneau-Westinghouse D Roadster Tournapulls and a Caterpillar DW20 did the long-haul work. Shorter runs were handled by two Caterpillar D8's with 18-cubic-yard Cat No. 80 scrapers. Five Euclid-mounted water tanks—three 2,500-gallon, one 7,000-gallon, and one 4,000-gallon rig—were also on hand. A heavy sheepsfoot roller worked only one day before it was replaced by two 50-ton Southwest pneumatic compactors pulled by a Euclid prime mover.

From the beginning, it was obvious that the dirt assignment was going to be difficult. Part of the soil showed caliche's tendency to absorb moisture and to roll tight. More difficult to handle was the sandy and silty lake-bed material which shed moisture. To blend the soil structures and allow for a uniform distribution of moisture, Bryner first used a Caterpillar D7 tractor and a rented farming-type disk. But the disk failed to move fast enough; its blades became clogged with wet earth. A new 18-inch John Deere two-way farm disk was brought in and hooked to a spare Caterpillar D8 tractor which was able to develop enough extra speed in high gear to throw mud away from the disk blades.

Turning to the problem of processing the aggregate base course, Bryner put a new self-propelled

Tuffy® Draglines

Reduce Rope Costs — Sometimes as much as 40%



Consistently Longer Service! That's the story we hear from people who use Tuffy Drags! Whether you keep records of dragline yardage, number of days in service or total cost per yard, you'll find Tuffy Dragline will often beat past records by as much as 40%! Like hundreds of others, you'll rate Tuffy tops for yardage . . . service . . . economy!

Tuffy Dragline Is Specially Constructed to give you a flexible rope that hugs the drum when casting! What's more, Tuffy Dragline is made to provide maximum abrasive resistance for longest possible service!

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By Test you will find that Tuffy moves *more* material at a *lower cost* to you.

Tuffy Scraper Rope

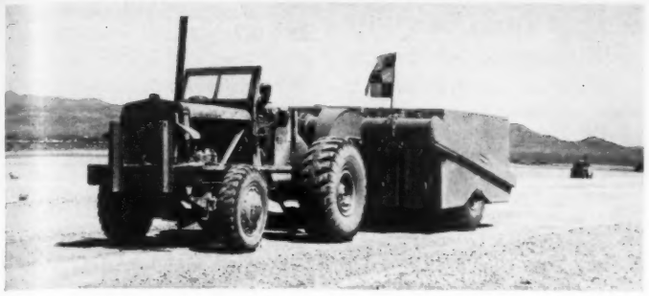
Balanced flexibility provided to withstand sharp bends over small drums and sheaves. Stiff enough to resist looping and kinking when slack.

Tuffy Slings

9-part machine-braided wire fabric! Will not materially damage fabric when kinked or knotted! Favorite with those that demand safety and lower costs!

Tuffy Dozer Rope

Combined with proper cut-off procedure Tuffy Dozer Rope will greatly increase your service life—cuts downtime. Available in 150' lengths—½" and 9/16".



After the base course has been thoroughly blended by the Seaman Trav-L-Plant, the material is rolled to the required 100 per cent density by Southwest 50-ton compactors pulled by Euclid prime movers.

Ray Day Photo

Seaman Trav-L-Plant — complete with water-metering equipment, a strong rear axle, and heavy-duty tines—onto the line. Making about three passes through each lift, the machine thoroughly blended the material, which pneumatic-tire rollers then compacted to a high density.

The base well which supplied water for this operation, however, contained a high percentage of sand and silt, and after several days the pump shaft on the Trav-L-Plant appeared worn. Truck-mounted equipment was then used to distribute water on the ground, and this method was used to wet down the base-course material.

Good Subbases Built

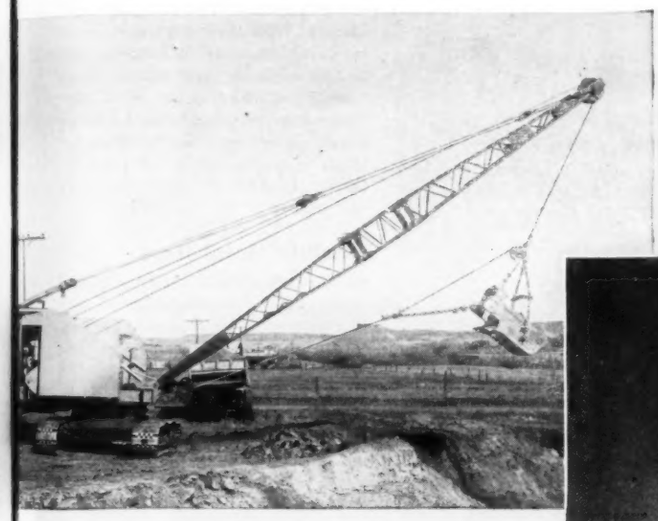
Granular subbase material was produced about three miles from the air base by a Cedarapids crushing plant which turned out 150 yards per hour. Base course material was produced to much finer tolerances by a shop-assembled screening outfit which averaged about 125 cubic yards per hour.

Both materials were hauled to the site by a fleet of company-owned trucks and placed on the subgrade by a shop-built spreader box. The 8-inch course was laid in two 4-inch lifts, and the top 6-inch aggregate base, in a single lift.

Some segregation took place as these materials were hauled over rough roads, dumped on the grade, then bladed into windrows by a Caterpillar No. 12 motor grader. This action was reversed as the Trav-L-Plant made its first pass behind the water truck; the material was processed completely after the machine had made three passes.

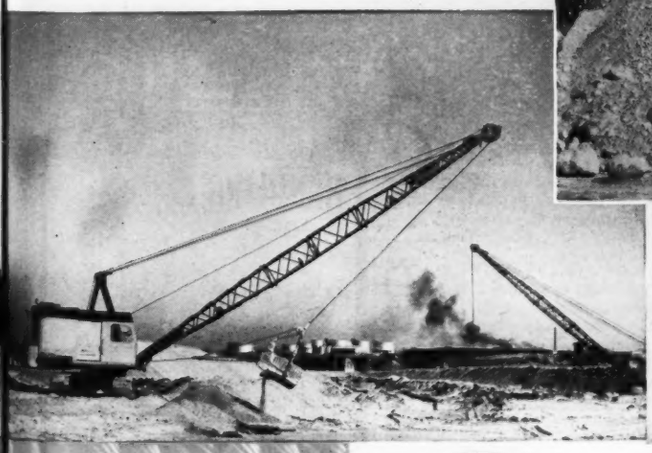
Near the end of this operation, the weather turned hot and windy, making it necessary to inject 10 per cent moisture into the materials so that the required moisture content of 8 per cent would still be retained at the time of compaction. Both Southwest 50-ton compactors were assigned full time to the base course work at this stage of the project.

The top of the base course was brought to a tolerance of ⅜-inch in 10 feet by having a Caterpillar No. 12 motor grader with 12-foot blade make repeated passes to tight-blade the material. If large surface particles were still not completely bedded when this work was done, a light drift of fine material was bladed across the surface to make the course tight and dense. THE END



Aggregate material is where you find it. Dragging it up over the side of a pit exposes the dragline rope to plenty of abrasive wear. One of the features of TUFFY DRAGLINE is an outer construction which *resists abrasive action* to the utmost.

Here an accommodating glacial stream piled sand and gravel high above ground—so high, in fact, a dragline is needed to keep the big dipper from undercutting and bringing slides down upon itself. On locations like this, the flexibility of Tuffy Dragline makes for ease in casting the bucket when loading and unloading.



On dam sites, the flexibility, abrasive resistance and high tensile strength of TUFFY DRAGLINE makes it capable of handling more yardage than rope constructions not designed for this special purpose.

Tuffy Hoist Line

Designed to give you the utmost in service! Tuffy Hoist Line is tailor-made for use on OVERHEAD, STIFF LEG and MOBILE CRANES, CLAMSHELLS and DERRICKS.

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Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric

Literature on New Pumps With Self-Priming Design

■ A special priming design and easy impeller adjustment are the main features stressed in literature on centrifugal pumps from the Ralph B. Carter Co., Hackensack, N. J. The Humdinger pumps have a twin-coaxial volute through which water with entrained air is recirculated until the air is exhausted from the suction hose and both the hose and the pump become filled with water. Because the pumps are free of mechanical priming devices, clogging, wearing, and breakdown problems of valves and by-passes have been eliminated.

A second feature is that the tolerance between the impeller and the volute is controlled without pump disassembly. The impeller is threaded on the shaft and may be locked in any desired position.

The line includes 1½ to 10-inch pumps with capacities from 5,500 to 250,000 gph in a variety of mountings. Gasoline, diesel, electric, or belt drive are available.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 140.

Booklet on Fountain Pen For Lettering and Drawing

■ A drawing-ink fountain pen for lettering and drawing is described in literature from John Henschel & Co., Inc., 105 E. 29th St., New York 16, N. Y. The booklet lists a series of interchangeable nibs available for the Pelican Graphos pen, including nibs for technical drawing, freehand drawing and sketching, art lettering, and stenciling.

The literature also illustrates the Graphos compass accessories and the assortment boxes and cases.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 82.

Portable Rock Drill And Concrete Breaker

■ Rock drills and concrete-breaking hammers driven by a small, portable gasoline engine or electric motor through one or more flexible shafts are being introduced to this country by the Pitnam Industrial Products Co., 608 Fifth Ave., New York 20, N. Y. Because the Pinazza power unit and tool are separate, the drill or hammer can be operated in any position. Furthermore, the light weight of the tool and power source make it possible to work in ordinarily inaccessible areas.

The rock-drilling hammers can be used for either wet or dry drilling. In the case of dry drilling, a small rotary compressor provides the air necessary to clear the hole. Rock drills are currently available in two sizes: the Model P50 hammer which weighs 35 pounds and the P70 which weighs 49 pounds. The former is driven by a 3.5-hp gasoline engine or electric motor, and the latter model is driven by a 5.5-hp unit.

The concrete-breaking hammer, normally driven by either a 2.2-hp gasoline engine or a 2½-hp electric motor, weighs 53 pounds.

The Pinazza concrete breaking hammer with gasoline engine drive and flexible shaft. It can also be supplied with an electric motor drive.

Where a gasoline engine drive is not practicable and where electric power is not otherwise available, the units can be supplied complete with engine-driven generator and a long connection to the electric driving motor.

For further information write to the company, or use the Request Card at page 18. Circle No. 119.

Low-Mount Hoist For Pickup Trucks

■ A new model low-mount hydraulic hoist for use on standard ½, ¾, and 1-ton pickup chassis has been announced by The Perfection Steel Body Co., Galion, Ohio. The Model 3316 TP hoist is mounted with a simplified kit of brackets.

The twin cylinders of the Perfection low-mount hoist are set low within the chassis frame to permit a lift point well ahead of the body hinges. The 450-pound unit has a maximum capacity of 6,000 pounds and is available with either power takeoff or electric drive.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 75.

Flexible Metal Hose

■ Literature on a flexible metal hose made with an interlocked construction that provides a quadruple wall thickness is available from the Atlantic Metal Hose Co., Inc., 308 Dyckman St., New York 34, N. Y. The folder gives details on several types of high-pressure hose, including one without a jacket, one with a braided jacket, and one with spiral wire armor in addition to the jacket.

A double-insulated hose also illustrated is designed for handling hot tar and asphalt. The booklet lists a wide variety of couplings for bronze and steel hose.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 69.

Single Seal Coating Indianapolis Municipal Airport runway.

Seal Coating Simplified
...and greatly improved!

McConnaughay Licensees are always ready to furnish top quality weather-proof seal-coat emulsions for use with cover aggregates of gravel, limestone, granite, slag, or sand. These emulsions have many outstanding features such as... (1) No flow on steep grades and high-crown highways, (2) No bleeding or flowing of asphalt film after breaking of the emulsion, (3) No washing during application, (4) Exceptionally good retention of aggregate, (5) Strong adhesion to treated pavement surface and cover aggregate, (6) Resistance to later softening and loss of aggregate cover on hot days, (7) Resistance to brittle cracking and loss of cover in cold weather. For full details on seal-coat, and for practical solutions to any special paving problems, get in touch with your nearest McConnaughay Licensee or contact...

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Ready-Mix Asphalt, Inc.
P. O. Box 882, *Fort Wayne 6, Ind.*
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Send for our complete catalog today. MADESCO TACKLE BLOCK CO. EASTON, PA.

MADESCO BLOCKS

HAE-M592—2-54

Galion's Model 104 motor grader.

New Engine for Grader

■ Galion's heavy-duty Model 104 motor grader is now supplied with a GM diesel engine of 93 hp at 1,800 rpm. This increase in horsepower is reported to make the unit one of the most powerful graders of its weight, which ranges from 21,785 pounds up, depending on extra equipment.

Another feature the manufacturer emphasizes is the machine's constant-mesh transmission. It has a barrel-shaped case design, spur gears, and positive alignment of bearings in the housing through the use of bearing race cases as aligning dowels. The clutch may be removed without disturbing the engine. Six overlapping forward and two reverse speeds are controlled by a single gearshift lever.

For further information write to the Galion Iron Works & Mfg. Co., Galion, Ohio, or use the Request Card at page 18. Circle No. 141.

Reminder of What to Check Before Pouring Concrete

■ A handy reminder or check list of ten important items to consider just before beginning a concrete pour can be obtained from the Irvington Form & Tank Corp., 20 Vesey St., New York 7, N. Y.

The Atlas Concrete Checker reminds concrete bosses to make a last-minute check on such important items as grade nails, accessories, boxes, sleeves, pilaster chamfer strips, center-to-center measurements on column bolts, etc.

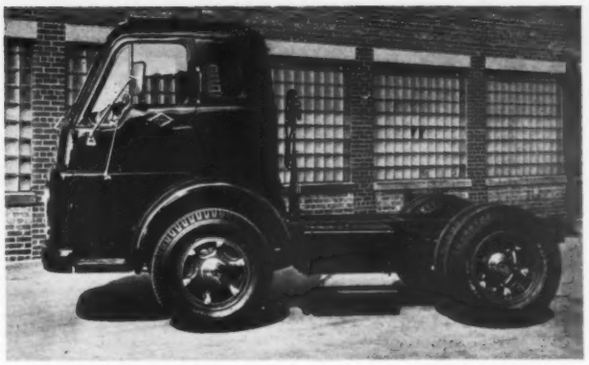
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 62.

Tilt-Cab Trucks Have Improved Accessibility

■ Cab-over-engine trucks with cabs that tilt for servicing without the use of a power unit of any kind are announced by the Diamond T Motor Car Co., 4401 W. 26th St., Chicago 23, Ill. This feature, which further improves the Diamond T trucks' accessibility for repair, has been achieved without any essential changes to the conventional engine, clutch, transmission, frame, axles, and other major elements of the units.

This tilt-cab truck line is designed primarily for highway hauling. Advantages, in addition to accessibility for maintenance, include maneuverability and large load capacity. Because the tilt-cab design concentrates about two-thirds of the chassis weight on the front axle, a large payload can be carried on the rear axle without exceeding legal limits. Long bodies can be used even on very short wheelbases.

For further information write to the company, or use the Request Card at page 18. Circle No. 142.



The new Diamond T cab-over-engine truck.

SOIL AIRE

ROLLPAC

Ruggedly built for heavy-duty service

$895.00

A Standout Popular-Priced One Ton Roller. Send for Catalog.

SOILAIRE INDUSTRIES

Minneapolis 3, Minnesota

Sold by over 75 distributors in United States and Canada

One of 17 A-C tractors, with Gar Wood dozers and cable control units, used by Yonkers Contracting Co. on their Maine Turnpike Contract.

S. J. Groves & Sons Co. rip into tough going with Gar Wood equipped HD-20 on Ohio Turnpike contract.

Dozing on the Turnpikes from Maine to Ohio!

Work on the big, new super-highways is in high gear this summer with contractors moving mountains of earth on projects throughout the country. As usual, Gar Wood dozers on Allis-Chalmers tractors fitted with Gar Wood cable control units, are handling a big share of the earthmoving on these major construction jobs.

Up in Maine, work is progressing on the second section of the Maine Turnpike—another high-speed, four lane divided highway running from Portland to Augusta.

On a contract for grading and draining an 11-mile stretch outside the twin cities of Lewiston-Auburn, Yonkers Contracting Co. is using 15 big Allis-Chalmers HD-20s and 2 HD-15s, *all Gar Wood equipped,* for stripping and spreading fill on the job. Over 3,000,000 yds. of dirt and 100,000 yds. of rock are involved in the contract.

In the photo at top, Yonkers Contracting Co. uses one of their 17 tractors, with Gar Wood dozers and cable control units, to spread fill for compaction by a sheepsfoot roller pulled by the same tractor.

Moving westward, contractors on New Jersey's tremendous new Garden State Parkway, from Cape May to the New York state line—and on the 500-mile New York Thruway, are using fleets of Gar Wood equipped Allis-Chalmers tractors in an effort to rush completion of the majority of the work by the end of the current working season.

In Pennsylvania preliminary work on extensions to the Pennsylvania Turnpike is underway and digging and dozing is swiftly progressing along the entire length of Ohio's big, new $283 million Turnpike.

In the photo at left, S. J. Groves & Sons Co. use one of their many Allis-Chalmers HD-20s, equipped with Gar Wood dozer and cable control unit, to rip into sandy clay, clogged with tree and shrub roots, along the right-of-way of their 12.9-mile, 1,750,000-cu. yd. contract. Groves is only one of the many contractors using Gar Wood equipment on these vital toll road links between the Atlantic Seaboard and Chicago.

When there is earthmoving to be done, contractors everywhere specify Gar Wood! 15 dozer models, designed for both cable and hydraulic operation, are available for all Allis-Chalmers crawler tractors. Gar Wood's dozer line is supplemented by a complete line of front and rear mounted cable control units for any dozer-scraper operation.

GAR WOOD INDUSTRIES, INC.

TRACTOR EQUIPMENT SALES • WAYNE, MICHIGAN

M-4029 N

Powered Cart Mounts Dumping-Type Body

■ A gasoline-powered cart suitable for construction use is made by the Kalamazoo Mfg. Co., 1827 Reed St., Kalamazoo 24, Mich. The Kal-Truk, built with a welded frame, has a tractor-type construction. Powered by a 14-hp two-cylinder Wisconsin air-cooled engine, the unit has three forward and one reverse speed. It has a heavy-duty tractor clutch and floating-drive axle.

An all-steel dump body that is standard equipment on the vehicle has a capacity of ⅔ wet cubic yards, 1 dry cubic yard, or 3,000 pounds. An interchangeable all-steel platform and steel side gates and end gates are available. The dump body can be loaded from a hopper, mixer, or ready-mix truck. The vehicle moves capacity loads up 20 to 30-degree ramps. A control gate permits partial discharge and narrow form pouring.

For further information write to the company, or use the Request Card at page 18. Circle No. 78.

New Warning Barrier

■ A new portable barrier especially designed for ease of transportation and handling is produced by Barmotive Products, Inc., 440 Peralta Ave., San Leandro, Calif. The Safe-T-Bar barrier consists of three basic units: a hinged sign frame, a folding A-leg assembly, and an adjustable-height single leg. These can quickly be put together in any desired combination for single barricades, continuous barriers of any length, or enclosure barricades around manholes or excavations. The joints between the sign frame units are articulated so that the barrier can follow irregular lines. The adjustable single legs will accommodate uneven terrain.

The A-leg and head assembly, used to support one or both ends of the sign frame, has a cadmium-plated head assembly with sockets at each side to hold the sign frame brackets. A 1-inch-ID center socket is provided for a flag or other warning device. The complete A-leg assembly folds to 2 x 2 x 38¾ inches and weighs less than 8 pounds.

The sign frame assembly has an angle-iron frame to take ¼-inch plywood, metal, or hardboard signs. Standard sign sizes are 18 x 18, 12 x 36, 24 x 24, and 12 x 48 inches, with special sizes also available.

For further information write to the company, or use the Request Card at page 18. Circle No. 13.

Tractor and Scraper Replacement Parts

■ Bottom track rollers for the Caterpillar D6 tractor are now available from the Hensley Equipment Co., 816 98th Ave., Oakland 3, Calif. These parts are interchangeable with standard factory rollers and fit standard track rails.

The company offers a catalog, on request, showing other Hensley replacement parts including rollers, dozer and scraper rippers, brush rakes, end-bits, scarifier teeth and shanks, and allied attachments.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 14.

THE FIRST AND ONLY 8-SPEED TRUCK HYDRA-MATIC gives this GMC M470 a big edge in stop-and-go operations like road surfacing. It saves wear and tear on both truck and driver—automatically. And the M470 is powered by a rugged engine that is—pound-for-pound—the mightiest in gas truck history.

GMC HYDRA-MATIC TRUCKS

Slow-motion jobs were tough before Hydra-Matic* GMC's

THEY were always the toughest—those creeping, crawling jobs with constant stop-and-go. And their incessant strains always meant earlier repair needs – and heavier expenses – *until Hydra-Matic GMC's put an end to that.*

In these self-shifting GMC haulers, all gear changes are clash-free. There's no harmful bucking and jerking from sudden starts. So your axle and drive line are immune to shock-loading damage.

Clutch-riding's no longer possible – for there's no clutch pedal. In fact, all conventional clutch replacements and repairs are ended—for good. And your fuel bills are cut substantially—in spite of the incessant stops and starts.

Even your tires last longer because Hydra-Matic always pours on power smoothly and evenly. And the easy, push-of-a-lever engine-braking action saves wear and tear on both brake drums and linings.

Easier on Drivers, Too

With a Hydra-Matic GMC, any driver does a better job – and is happier doing it. After all, he's freed from *hundreds* of clutch-and-shift maneuvers—per day. So the work gets done faster – without truck abuse.

Want the rest of the story? See your GMC dealer. Find out all the other reasons these great new GMC's can outwork—and outlast—any regular-shift truck today.

*Hydra-Matic standard on many models; optional at extra cost on some others.

Be careful—drive safely

GMC Truck & Coach—A General Motors Division

In a Hayward, there's no contact between the closing mechanism and the material handled. This "no contact" feature is a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

THE HAYWARD COMPANY
50 Church St., New York 7, N. Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

New Measuring Tape Of Durable Woven Fiber

■ A non-metallic woven measuring tape made of long-wearing fiber is offered by the Lufkin Rule Co., Saginaw, Mich. The Lufkin Hi-Line tape is reported to have good dimensional stability even after it is repeatedly soaked and dried. Markings are protected by coatings of plastic that are resistant to abrasion, cracking, mildew, moisture, and temperature changes.

For further information write to the company, or use the Request Card at page 18. Circle No. 159.

Hensley Adds Department

Hensley Equipment Co., Oakland, Calif., manufacturer of dozer and scraper rippers, end bits, bottom track rollers, and allied parts, has added a cutting-edge department. The edges are available for all kinds of earthmoving equipment.

Giant Equipment Tire

■ The largest tire it has ever made—6½ feet in diameter and weighing 1,200 pounds—is now being produced by the B. F. Goodrich Co., Akron 18, Ohio. The new tire size is 24.00 x 29.

It is reported that earthmoving machines using these tires can handle loads as high as 23 tons in such off-the-road operations as turnpike construction, dam building, and open-pit mining.

For further information write to the company, or use the Request Card at page 18. Circle No. 23.

Reinforcing-Steel Service

■ A new bulletin describes a specialized service that supplies the construction industry with high-bonding-type concrete-reinforcing bars, wire fabric, spirals, expanded metal, caisson rings, reinforcing accessories, and other steels for building construction. The service also includes the drawing of setting plans, fabrication of reinforcing bars and related products, tagging of the steel according to setting plans, and timed deliveries based on the progress of the job. Local reinforcing-steel stocks and a contractors' service are available across the country.

To obtain this literature write to Joseph T. Ryerson & Son, Inc., P. O. Box 8000-A, Chicago 80, Ill., or use the Request Card at page 18. Circle No. 58.

THE NEW SIE refraction seismograph system is shown being used to determine the thickness of the overburden at a projected building site. This system is used for the determination of depth-to-bedrock, analysis of fill material, location of water-bearing strata, and for other subsurface testing. It presents data in a continuous horizontal and vertical profile so that a complete subsurface picture is furnished from relatively few determinations. For further information write to the Southwestern Industrial Electronics Co., 2831 Post Oak Road, P. O. Box 13058, Houston 19, Texas, or use the Request Card at page 18. Circle No. 72.

ASPHALT MIXING PLANTS
2000 TO 6000 LB. CAPACITY

20 years experience in design and manufacture of this truly balanced equipment, assures McCarter customers of standardized parts and minimum costs.

McCarter standard plants — designed and manufactured in their own works are readily adaptable to your special requirements. Individual units also available.

DRYERS (hot or hot & cold material, center outlet type) • MIXERS • ASPHALT BUCKETS (Steam, hot oil or electric heated) • AGGREGATE HOPPERS • BINS • APRON TYPE FEEDERS • CYCLONE COLLECTORS • ELEVATORS • STEEL STRUCTURES

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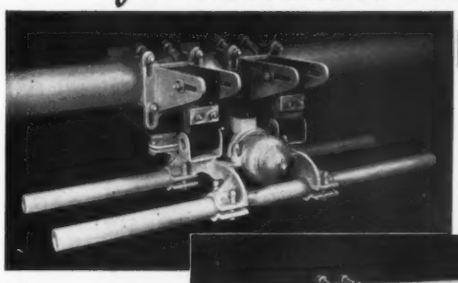
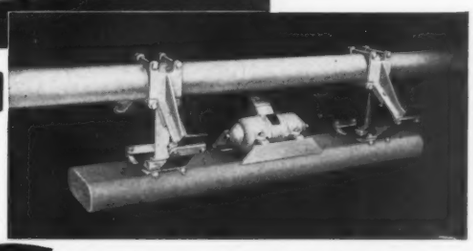
SURFACE and INTERNAL VIBRATION
for **CONCRETE PAVING**



INTERNAL TYPE

Tubes vibrate deep in concrete. One unit, as shown, for each 5'-0" (maximum) of slab width. Usually attached to front of finisher.



SURFACE TYPE

Tube vibrates on surface. Accomplishes thorough densification of 10" concrete slabs. One unit, as shown, for each 6'-0" (maximum) of slab width. Usually attached to rear of spreader.

JACKSON GIVES YOU BOTH!

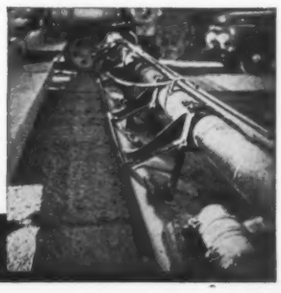
A 25', 5-motor Tube of the internal type quickly plasticizing a tough mix on thick slab construction.

On this job, on which no spreader was used, the Paving Tube materially reduced the cost of spreading concrete.

The contractor who owns a Jackson Paving Tube can quickly switch from INTERNAL to SURFACE vibration, or vice versa, and meet any concrete slab specifications — at a minimum of equipment investment.

Supplied with extraordinarily powerful motors, the JACKSON INTERNAL Paving Tube will thoroughly vibrate all concrete slabs as thick as 24" and as wide as 25', quickly plasticizing the very dry, harsh mixes. Attached to a standard finisher, its use materially reduces spreading labor where no spreader is used. Adapted to SURFACE vibratory operation, it will do a perfect job of vibrating any mix in depths up to 12". Powered by a Jackson Portable Power Plant mounted on parent equipment and controlled by its operator.

For better results and lowest possible costs buy a JACKSON Vibratory Paving Tube. See your Jackson distributor or write for complete details.



In this view note the highly plastic condition of the concrete accomplished by the surface type Paving Tube towed by the spreader.

JACKSON VIBRATORS, INC.
LUDINGTON MICHIGAN

PORTRAIT IN PRINT

George Koss: Modern Midwesterner

By RALPH MONSON

Koss leafs through some of the day's mail in his Des Moines office. *C&E Staff Photos*

WHEN THE ASSOCIATED GENERAL CONTRACTORS of America elected George C. Koss vice president earlier this year, it put into office a busy man who seems to thrive on activity. The president of the Koss Construction Co., Des Moines, Iowa, working in the AGC of Iowa and the national organization, also manages to find time to devote to matters affecting the construction industry as a whole and to local civic affairs.

The greatest share of Koss' time is taken up with the Koss company, a firm recognized as one of the larger concrete paving organizations in the midwest, which last year placed more than 1,200,000 square yards of concrete pavement under 5½ million dollars worth of contracts.

Last year's big job was at Grandview Air Force Base, near Kansas City, Mo. This year, as in 1953, indications are that the company's work will be concentrated in Kansas and Missouri. Some of the recent Koss jobs included paving runways, taxiways, aprons, and roads at the municipal airport in Wichita, Kans., and lengthening and strengthening runways for the air base at Olathe, Kans.

Organized in 1914 by Koss' father, George W. Koss, this firm worked on bridges and both concrete and asphaltic paving until 1940. Between 1934 and 1946, the firm did both concrete and asphaltic paving. But blacktop work was given up in 1946, and the firm has since concentrated on concrete work only.

Not only does the company specialize in concrete pavements, but it also confines its work to just two major crews. A small dirt crew is maintained for incidental grading and shouldering work. If required grading is light, the crew may do the entire operation. In cases where grading is part of the paving contract, the work is subcontracted to grading firms.

Smooth Organization

Much of the company's success is probably due to the authority Koss delegates to his men in the field. A project superintendent is given a free hand to plan a job, order materials and supplies, and select a crew.

A typical owner's comment:*

"The Hydro-Clam Digger has exceeded our expectations of versatility; has been very satisfactory; and has resulted in material savings of time and money in the planting operations of this Department. We have found that the Clam Shell and the Back Hoe attachment can be interchanged by our operator, with a helper, in approximately twenty minutes. The Back Hoe has been able to remove up to 12 inches of frost, which would have been impracticable to do by hand."

Shawnee HYDRO-CLAM

- Digs through hard asphalt and frozen ground 8½′ deep
- Ideal for spot excavations
- Adaptable to most all tractors
- Loads trucks—⅓ yd. Clam Capacity

Purchase this machine for less than the cost of excavating jobs. All hydraulic operation. Digs straight down, forms square corners and level bottom of excavations.

CONVERTS TO BACK HOE IN MINUTES FOR TRENCHING TO 9½′ DEEP—ONE MACHINE FOR TWO OPERATIONS!

*name on request

Shawnee Scout

SHAWNEE MANUFACTURING CO.

1947-M N. Topeka, Topeka, Kansas

MAINTENANCE of a VIBRO-PLUS ROLLGEAR is child's play...

The Patented Internal Vibrator That Keeps Upkeep Costs Down...

There's no involved, intricate process in keeping the Vibro-Plus Vibrator in working order! Advance design eliminates those parts which cause the most trouble and breakdowns: clutches, V-belts, high-speed flexible shafts and makes it completely interchangeable between gas, electric and air.

It requires no maintenance or lubrication on the job. It is factory lubricated and needs relubrication only after the job is done.

A really fool proof unit which is covered by a 6 month guarantee.

Write for FREE Illustrated Catalogue, Box B.

VIBRO-PLUS PRODUCTS, INC.

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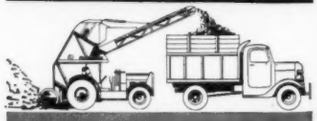
longest trucks

highest trucks



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AURORA, ILLINOIS, U.S.A.

Head of well known Iowa concrete paving firm takes up new duties as AGC vice president

Most of the men on a Koss project speak of the equipment as if it were their own. All seem to have an interest in doing a good job and making a fair profit. And their sense of personal identification with the company is increased by the consideration Koss shows for his employees.

Koss has established winter quarters for the company in Topeka, Kans., and Springfield, Mo., since practically all of the firm's work has been in these two states in recent years. This setup assures men that they'll be in the general area from March to December during the construction season, and in winter quarters to overhaul equipment at the end of the season. This has given them a chance to establish permanent homes, to send their children to school regularly, and to become a part of the community in which they live.

As might be expected, employee morale is high and the company's honor roll of members in its 25, 15, 10, and 5-year clubs is climbing. Adding to the employees' sense of identification and accomplishment is the company's annual publication, *The Hard Roader,* which contains pictures and articles about the season's work. This year, Koss is planning a company movie to take the place of the publication. When work slacks off in the fall, he hopes to have the 15-minute color film, showing construction work on his spreads, ready for release.

Even the firm's specialization in concrete work is tied up with employee relationships. "Theoretically", he says, "you can run both concrete and blacktop crews, but it's not economical to keep the men strictly on one type or the other, and they don't like to be transferred. A concrete man doesn't like to work on blacktop, nor does a blacktop man like to be switched to a concrete crew. So we gave up the blacktop and now concentrate our efforts on concrete".

Wants Best Equipment

The establishment of winter headquarters, paying off in employee loyalty, has also paid off in terms of equipment. Each winter, every piece of machinery is carefully overhauled in shops located in the Quonset-type steel buildings so that equipment will be in the best condition to start the next construction season. The winter's work keeps job interruptions due to breakdowns at a minimum when the machines head out to a job again.

Koss has equipped his crews with the finest machinery available so that the men will turn out their best work. And by standardizing as much as possible, Koss has found that maintenance is better and less expensive. Each of his two crews has two Koehring 34-E dual-drum pavers, and International trucks, Caterpillar earthmovers, and Jaeger finishing machines are used on his spreads almost exclusively.

The company owns only one old paver, a Koehring 13-E, circa 1920. It's a miniature working model which rests on the counter in the firm's offices in the Farm Bureau Building in Des Moines. When compared with the modern machines used by the company today, it emphasizes the changes in equipment and methods which have come about in the past few decades.

Koss himself hasn't seen all these

(Continued on next page)

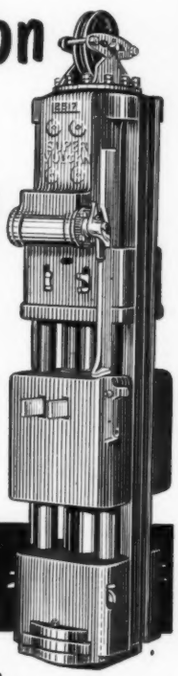
In the office of the Koss Construction Co., George Koss looks over a model of the Koehring 13-E paver which, like the company itself, has undergone many changes in the past three decades. Koss uses modern Koehring machines exclusively on today's spreads.

Greater Penetration Per Blow

SUPER VULCAN DIFFERENTIAL ACTING PILE HAMMERS

Rugged strength, simple design, positive action. Delivers twice the usual number of blows per minute with 25 to 35 per cent less steam per blow.

WRITE TODAY FOR COMPLETE DETAILS AND NAME OF NEAREST DEALER

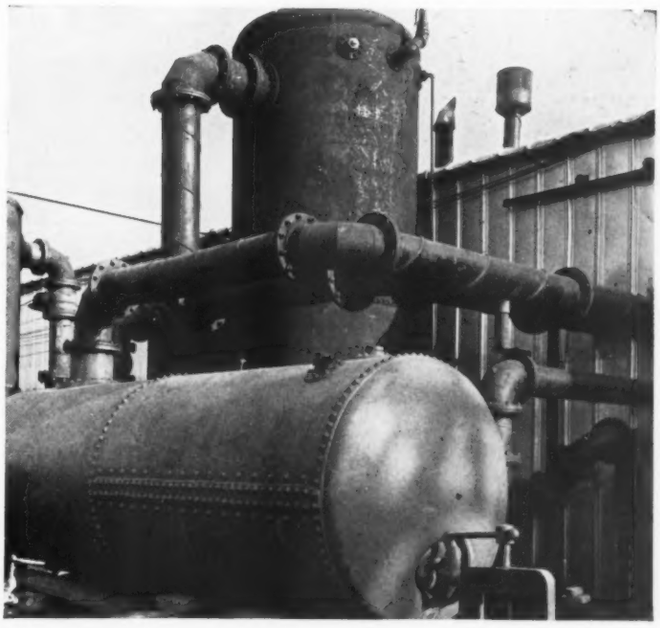


VULCAN IRON WORKS

Manufacturers of Pile Driving Hammers and Pile Extractors Since 1852

VULCAN IRON WORKS • 329 NORTH BELL AVENUE • CHICAGO 12, ILL.

THIS PIPE GIVES EXTRA HANDS TO CONTRACTORS



Lines of large diameter Naylor pipe are just like extra hands in the construction field. They carry air. They carry water. They do a whale of a job on ventilating in tunnel work and other underground construction. Light weight makes Naylor lines easy to handle and install. The extra strength of the lockseamed-spiral-welded structure adds what it takes for these lines to stand up in rough service. The Naylor Wedge-Lock coupling simplifies connection and speeds construction right down the line. Diameters from 4" to 30" and wall thicknesses from 14 to 7 gauge provide size range to meet all requirements. Write for Bulletins No. 507 and No. 513.

NAYLOR PIPE

Naylor Pipe Company • 1270 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

(Continued from preceding page)

changes. Born in Boone, Iowa, he moved to Des Moines while still a boy and attended public schools in his adopted home town. Later, he attended Philips Exeter Academy at Exeter, N. H., and then went to Harvard University, where he completed his formal schooling in 1929.

After being graduated, he served as an instrument man for the Chicago & Northwestern railway on location work in South Dakota, and his first assignment with the Koss company was on a bridge job at Crystal Lake, Ill. In 1930, he went to Louisiana as a local manager for the company, which was then engaged in constructing a number of projects under the original Huey Long program. The same year, he married his charming wife. Completing his first year in Louisiana, he became vice president of the company. Then he returned to Des Moines and entered into active supervision of the business, taking over in 1933 when his father, George W. Koss, retired. The elder Koss still maintains an active interest in the firm.

With his brother, Richard B. Koss, and R. M. Cothout, both vice presidents of the organization, Koss has been with the company for 25 years or more. In this time, Koss has tried to keep the company abreast of changes in concrete techniques. Since 1950, the company has been sawing transverse joints for the state of Kansas. Missouri is also beginning to use this method. During the years, he has seen paving width and paving thickness increase greatly.

Concrete curing, too, has caused the company to shift its methods a number of times. Since the time the new slab was covered with earth, new curing methods have called for paper, then membrane. Today, one state is again specifying a moist concrete cover.

But regardless of methods specified, Koss continually tries to speed and improve operations to deliver a good job at an economical figure. When lip curbs were commonly included on rural roads, the company designed and built its own special machine to ride the paving forms spanning the roadway so that the curbs could be built accurately. While these curbs have been almost universally abandoned on rural routes today, the company still has the machines available to do the job on urban sections whenever specifications call for curbs.

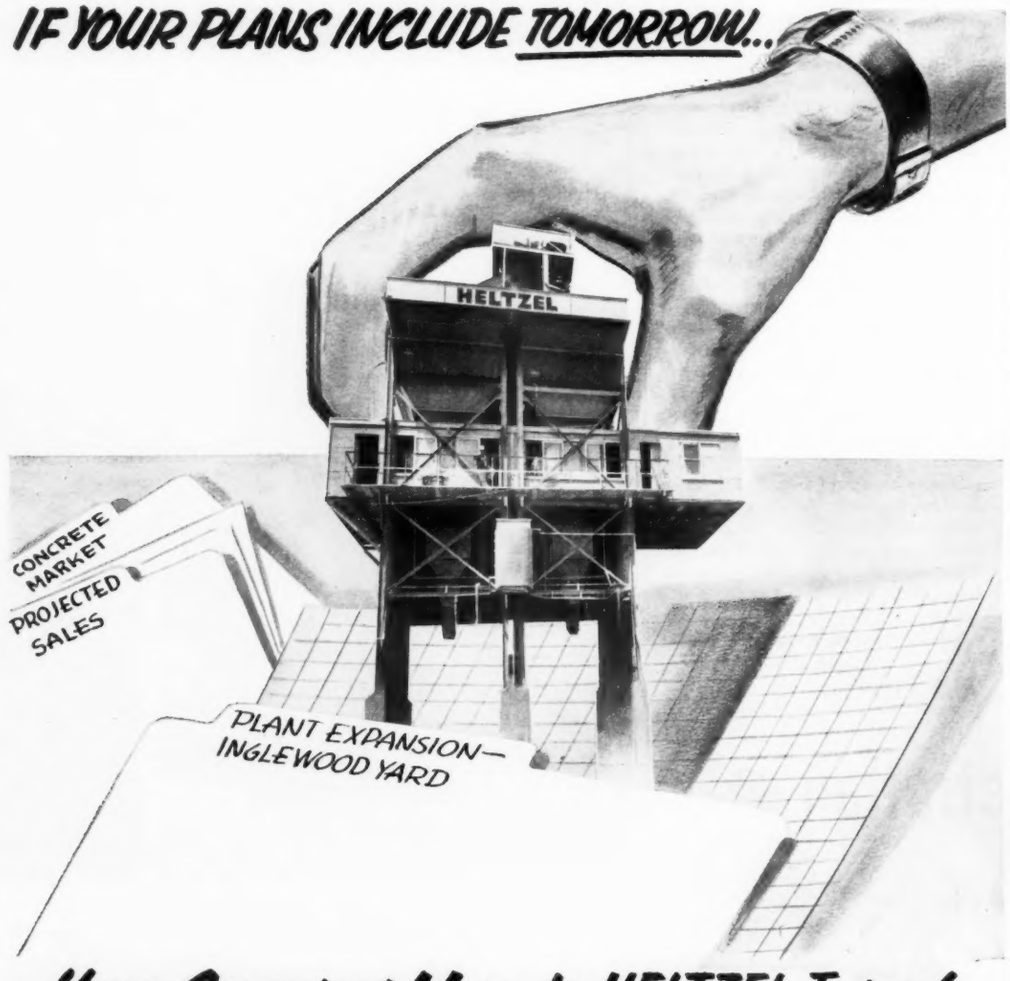
The modernity and efficiency of the company's construction activity is also reflected in the firm's office work. Payrolls and job records in field offices are kept by a Ditto system, with the result that only a small force is needed in the central office. Field offices are housed in trailers, and each is equipped with an air conditioner which, Koss claims, makes office personnel more efficient by providing them with comfortable working conditions. These units also help to keep office equipment clean and in good condition.

By the way he manages his company, and through his activity in behalf of the AGC, Koss is recognized as a leader in the construction field, not only in Iowa and the midwest, but also in the nation. Culminating this recognition was his election as vice president of the AGC Recognition of his role as a leader in his own community was the Des Moines Tribune Community Award, which was presented to him just two weeks before he took over his duties as an AGC officer.

Established by the late managing editor of the paper, W. G. Hale, the award is made annually to "the Des Moines person regarded as having performed the most valuable service to the community". Koss, selected as the 1952 winner by a jury composed of previous winners, was the 32nd person to receive the award.

Some of the organizations which currently make demands upon his time are the Des Moines Planning and Zoning Commission and the Greater Des Moines Committee. A member of the former organization since 1942, he was its chairman in 1952. That same year, he led the United Campaign for the Greater Des Moines area, helping to make this new venture a united fund-

IF YOUR PLANS INCLUDE TOMORROW...



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Designed to meet future requirements —engineered for speed, accuracy and low cost operation — built to give you years of "around the clock" service . . . three good reasons why it's smart business to think of HELTZEL when you're thinking of concrete batching equipment.

For when you purchase HELTZEL you're making a sound investment in the future. You are assured of the very finest quality, the last word in modern batching methods, backed by almost 50 years of batch plant manufacturing know how.

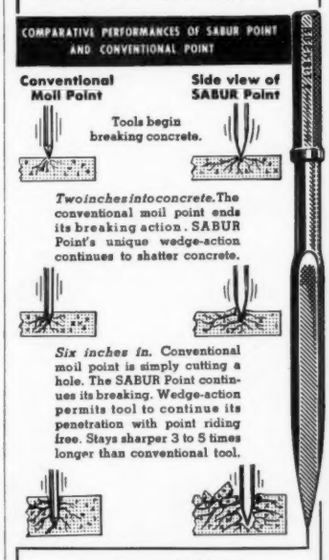
Compare HELTZEL in every way — see the new Heltzel Type 2 and Type 3 plants — talk with owners and you too, if you're thinking about tomorrow, will invest in HELTZEL today!

HELTZEL BATCHING PLANTS 7800 Thomas Road

The HELTZEL STEEL FORM & IRON CO., WARREN, OHIO

MORE CONCRETE BREAKAGE
. . . less man hours . . .
with SABUR POINTS

Step up your concrete breakage at least 50% with Sabur Points. Test one! Learn why leading contractors everywhere order and re-order. Your money back if point does not prove its worth in 24-day test. Order from distributor today. Write us for new bulletin TCE-11-3.


COMPARATIVE PERFORMANCES OF SABUR POINT AND CONVENTIONAL POINT
Conventional Moil Point
Side view of SABUR Point
Tools begin breaking concrete.
Two inches into concrete. The conventional moil point ends its breaking action. SABUR Point's unique wedge-action continues to shatter concrete.
Six inches in. Conventional moil point is simply cutting a hole. The SABUR Point continues its breaking. Wedge-action permits tool to continue its penetration with point riding free. Stays sharper 3 to 5 times longer than conventional tool.

Brunner & Lay
9300 King St., Franklin Park, Ill. Est. 1882
Affiliated plants & warehouses
Asheville, Dallas, Los Angeles, Philadelphia, Portland

raising agency for the city. A director of the Community Chest from 1944 to 1951, he also found time to serve as general chairman of the 1945 American Red Cross War Fund Drive.

Aside from these civic affairs, Koss has been a trustee of the Des Moines Club since 1947; trustee of the Edmundson Art Foundation, Inc., since 1948; and member of the board of directors of the Roadside Settlement House since 1949. He was a trustee of Drake University in 1951. Director of the Des Moines Chamber of Commerce since 1942, he is now its vice president.

Koss is equally active in professional associations, and notably so in the AGC. President of the AGC of Iowa in 1940, he was serving as national director from the state and as a member of the 1952-53 executive committee when he was elected vice president. He is also chairman of the AGC of Iowa labor relations committee, and co-chairman of the joint cooperative committee of the AASHO and the AGC. Some of his activities as an AGC representative have taken him to Washington where he has appeared before congressional committees on matters of concern to contractors. With his new duties, Koss will be busier this year than ever before. And, since AGC has a policy of advancing its vice president to president, he can look forward to an even more active year in 1955. THE END

Hardfacing Resists Impact and Abrasion

■ A new hardfacing rod developed specifically to withstand abrasion and heavy impact has been placed on the market by Mir-O-Col Alloy Co., 312 N. Avenue 21, Los Angeles 31, Calif. The new BR rod is available for either electric or acetylene application. A characteristic of the rod is its multiple-pass feature. Worn parts originally rebuilt with BR rod can be rebuilt over and over again, with the new metal forming a permanent bond with the previous deposit.

Smooth flowing and a fast burn-off rate, that appreciably reduces time of application, are features of the rod. It is recommended for rebuilding or hard surfacing such equipment as crusher jaws and rolls, as well as other rugged service equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 7.

Nickel Steels and Alloys In Bridge Construction

■ A new booklet presents a picture of the modern usage and past history of nickel alloys in bridge construction. The use of the higher-strength nickel steels, it is emphasized, makes it possible to design lighter sections to eliminate excess weight. The use of high-strength low-alloy steels with their superior mechanical properties is described. Examples of the use of other materials such as ductile iron, Monel, nickel, cast iron, and cast nickel alloy steel are also given.

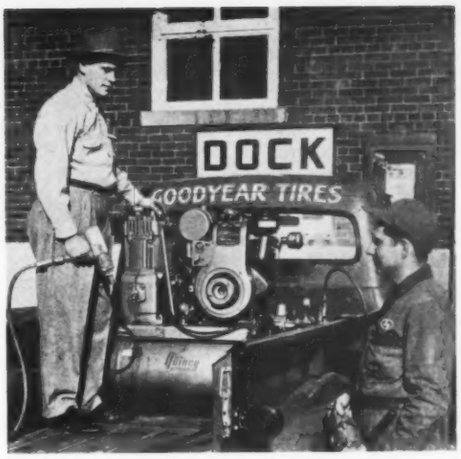
To obtain this literature write to the International Nickel Co., Inc., 67 Wall St., New York 5, N. Y., or use the Request Card at page 18. Circle No. 44.

Utility Compressor

■ Designed for mounting in service trucks, the new Quincy Model HT-325 compressor supplies air for inflating tires and operating lubricating equipment, pneumatic wrenches, and other tools. The gasoline engine starts with a pull rope, or by electric starter powered by the truck battery.

A tank outlet manifold supplies reduced air pressure for tools and full pressure for other requirements. Tank pressure from 165 to 175 psi is maintained by a constant-speed unloader.

For further information write to the Quincy Compressor Co., Quincy, Ill., or use the Request Card at page 18. Circle No. 2.



The Quincy Model HT-325 compressor can be mounted on a small pick-up truck.

In a Single Mississippi County

An A-W Power Grader Finds These TEN DIFFERENT Things to Do

and does each superlatively well thanks to A-W's exclusive All-Wheel Drive and All-Wheel Steer

Whatever the problem . . . whatever the job . . . one of those pictured on this page, or dozens of others, you can do it better with an Austin-Western Power Grader.

All-Wheel Drive provides 30% more Power-at-the-Blade; keeps the front end of the grader under control at all times. All-Wheel Steer makes the grader twice as maneuverable. Rear Steer shifts the rear truck from side to side, for better traction and smoother operation.

The tougher the job, the more outstanding the performance of A-W "88" and "99" Power Graders in comparison with ordinary front steer, rear drive machines.

1 All-Wheel Steer carries continuous ditch cuts around corners.

2 Six powerful driving wheel provide maximum flotation i soft or sandy soils.

3 Blading in reverse is very much easier with All-Wheel Steer.

4 Fingertip hydraulic rear steer makes it easy to maneuver around obstructions.

5 All-Wheel Drive holds machine and blade steady on rough, badly eroded banks.

6 No tire marks on this wid shoulder, thanks to rear steer

7 Controlled traction moves big windrows, farther and faster.

8 Live power in front drivers makes it easy to ride steep banks, when finishing.

9 Rear steer helps the blade do a fine job of gravel maintenance.

10 Rear truck remains on goo footing when pulling we ditches, after a rain.

Austin-Western
Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes

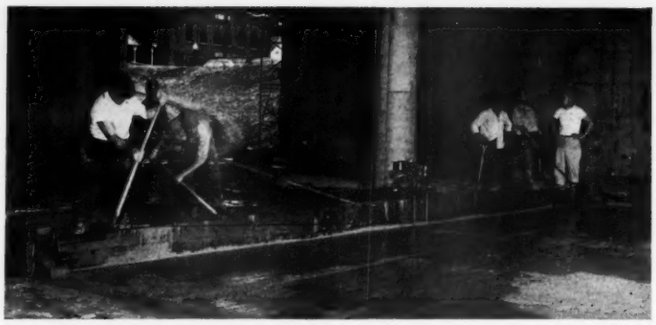
BALDWIN LIMA HAMILTON BLH
Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Screed Strikes Off A 33-Ft.-Wide Section Of Stiff-Mix Concrete

■ A 33-foot Stow vibrating screed was recently used to strike off a concrete floor on a warehouse going up in Binghamton, N. Y. Only three men—one at each end and one pulling a rope attached to the center—pulled the extra-wide screed on its roller assemblies to strike off the section. The screed's vibration also allowed the use of a very stiff mix of 1-inch-slump concrete. The use of this mix, plus the fact that the floor was struck off in one large section at one time, made it possible to start the rotary-trowel finishing one hour after screeding.

On the special screed used, the beam was split at the center to make the unit easier to ship. The two sections were then bolted together at the job site, and cables were added to prevent sag.



The use of an extra-long screed is demonstrated on this concrete floor. The Stow vibrating screed used is 33 feet long. The bare spot at right is for a drain installation.

Another development in the Stow line of screeds is that beams over 25 feet in length now have a tapered beam bolted to the lower beam. This distributes the weight of the engine evenly on the wooden beam to prevent sagging in the center.

For further information write to the Stow Mfg. Co., 443 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 127.

Current-Meter Offered In Salt-Water Model

■ A salt-water model of the Gurley current meter is now available from W. & L. E. Gurley, 518 Fulton St., Troy, N. Y. The new model has a commutator which indicates each tenth revolution of the bucket wheel. A commutator for indicating single revolutions can also be supplied.

The commutator box is sealed to exclude salt water—a conductor of electricity—from the contact chamber, thus preventing short circuits.

The Price Pattern meters are available in a variety of outfits for overhead-cable suspension, wading-rod suspension, and for use by exploration or survey parties. The company also makes the Pygmy meter for shallow streams, flumes, and canals.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 61.

Booklet on Equipment For Inert-Gas Welding

■ A catalog covering in detail features of its Heliwelding process and the equipment used with it is available from the Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y. Heliwelding is Airco's tungsten arc-welding process which uses an inert-gas shield of helium or argon or both to protect the weld from contamination by the atmosphere. It joins light gages of the metals that are difficult to weld.

The catalog describes air or water-cooled manual holders, light or heavy-duty water-cooled machine holders for use with the semiautomatic equipment, and an automatic head that can be used with the Heliweld process. An automatic hard-facing process using a vibratory feeder is also described.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 20.

Carver Pump Appointment

Recently named western district sales manager for the Carver Pump Co., Muscatine, Iowa, manufacturer of centrifugal pumps, was William A. McMahan. He will cover Arizona, California, Oregon, Washington, Nevada, Utah, Idaho, Wyoming, and Montana.

THOUSANDS OF ALLIS-CHALMERS MODEL D MOTOR GRADERS NOW IN USE

FINISHES BETWEEN FORMS, cleans up, loads trucks, backfills, landscapes . . . at low cost.

Five Years in the Field Prove Big-Grader Performance at One-Third the Cost

From its introduction in 1949, the Allis-Chalmers Model D established itself as a real pacemaker in the motor grader field. It was the first low-cost machine to offer tandem drive, single member tubular frame and the famous ROLL-AWAY moldboard. The "D" has proved again and again that it does outstanding work on both construction and maintenance.

Several easily mounted attachments make it invaluable all year 'round: hydraulically controlled, rear-end loader; shoulder maintainer that is interchangeable with loader bucket; hydraulically controlled scarifier; both blade and V-type snowplows.

Allis-Chalmers has now added even more to the Model D's workability. It offers a new 50 brake horsepower, "POWER-CRATER" engine; leaning front wheels** and power circle turn**. Yet the Model D's original cost is still only one-third that of a large grader, and operating, service and replacement part costs are proportionately low.

We invite you to talk with your nearby Allis-Chalmers dealer . . . compare values . . . and then ask for a demonstration.

**Optional equipment ROLL-AWAY and POWER-CRATER are Allis-Chalmers trademarks.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

(*Advertisement*)

LETTERS from contractors—

Sirs:

We purchased our first Model D in July, 1952. We are called on to do almost every kind of job known to the industry from paving small private driveways and parking areas to the larger street and road jobs. We also do a lot of paving inside buildings such as garages and warehouses. We find the Model D will deliver the goods in close places and on small jobs with a minimum amount of hand labor which is the difference between profit and loss on most small jobs.

The maneuverability, operator's vision, and mobility of the Model D make it a money-maker on any job, large or small. We find the Model D ideal for curb and gutter excavation, cutting sub grades, working intersections, laying down cold-mix materials, spreading base materials and finishing.

We purchased our second Model D in June, 1953, because our first machine had proved to be such a good investment. The Model D's do seventy percent of all our grader work, at our initial investment of about one-third that of the large machine. Our operating costs, fuel and repairs on the Model D's are less than one-third that of the large machine.

HUGH HANLEY
Norris-Hanley-Norris
General Contractors

Sirs:

On May 16, 1952, I took delivery on my Model D and in my opinion there is not a better machine built for small grading work. For spreading rock and dressing up shoulders, it is a dandy . . . you get up on the shoulder and dress it up without any break, and when you get through your work is done. No going back to repair rough places made by a heavier machine.

This grader hasn't been in the shop since it was purchased. I can grease it all over in five minutes. I belive it has made many times what it cost me.

L. E. BUHLER
L. F. Buhler Construction Co.

Sirs:

We are very pleased with our Allis-Chalmers Model D Motor Grader. This machine is being used to rough grade and finish grade streets and lots on our 75 acre development. Our area is exceptionally rocky, but we feel we have done big grader work with this machine. We believe this is the toughest machine for its size we have seen.

The "D" is outstanding in its ease of operation. Our operator says he has excellent visibility at all times. It is economical to operate and has worked very satisfactorily.

I. J. MAY, *President*
Southwest Development Co.

The Indispensable
DISPENSER

New Dispenser for Air Entraining Agents and Calcium Chloride

Write for New Folder

J-W MATERIALS, INC.
P. O. Box 288, Napoleon, Ohio

The Drive-It cartridge-operated fastening tool is available in a new smaller model.

Cartridge-Type Tool Drives Pin in Concrete

■ A smaller lightweight model of its powder-actuated tool that drives steel fastening pins by single-load blank cartridges is announced by the Powder Power Tool Corp., 7526 S. W. Macadam Ave., Portland 1, Oreg. The break-open Model 320 Drive-It fastening tool sets 5 to 8 hard-steel pins a minute directly into steel or concrete. This way of attaching wood or metal to concrete eliminates all preparatory drilling.

Breech-loading of pin and cartridge gives fast safe operation at any stage of construction. The vented barrel and large safety pad protect both operator and working surface. Pins are threaded or plain, with special pins available for particular specifications.

For further information write to the company, or use the Request Card at page 18. Circle No. 60.

Building Paper Reinforced With Blown-Glass Fibers

■ New literature from the Angier Corp., Framingham, Mass., shows this company's tear-resistant and waterproof building paper. The Glass-mat paper, which is generally used for concrete curing, also has other construction applications. It is reinforced with swirl-blown glass fibers imbedded in two layers of asphalt between sheets of Kraft paper. Both edges are further reinforced with heavy glass yarns to provide initial cross-tear strength.

The literature lists features and specifications for two types of reinforced building paper offered. The paper is available in standard rolls 36 to 96 inches wide by 100 linear yards, or in sheets and narrow rolls cut to the customer's specification.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 158.

Now!
BUY used equipment
SELL used equipment
ACQUIRE competent personnel
through
The Trading Post Section of
CONTRACTORS & ENGINEERS
See page 119

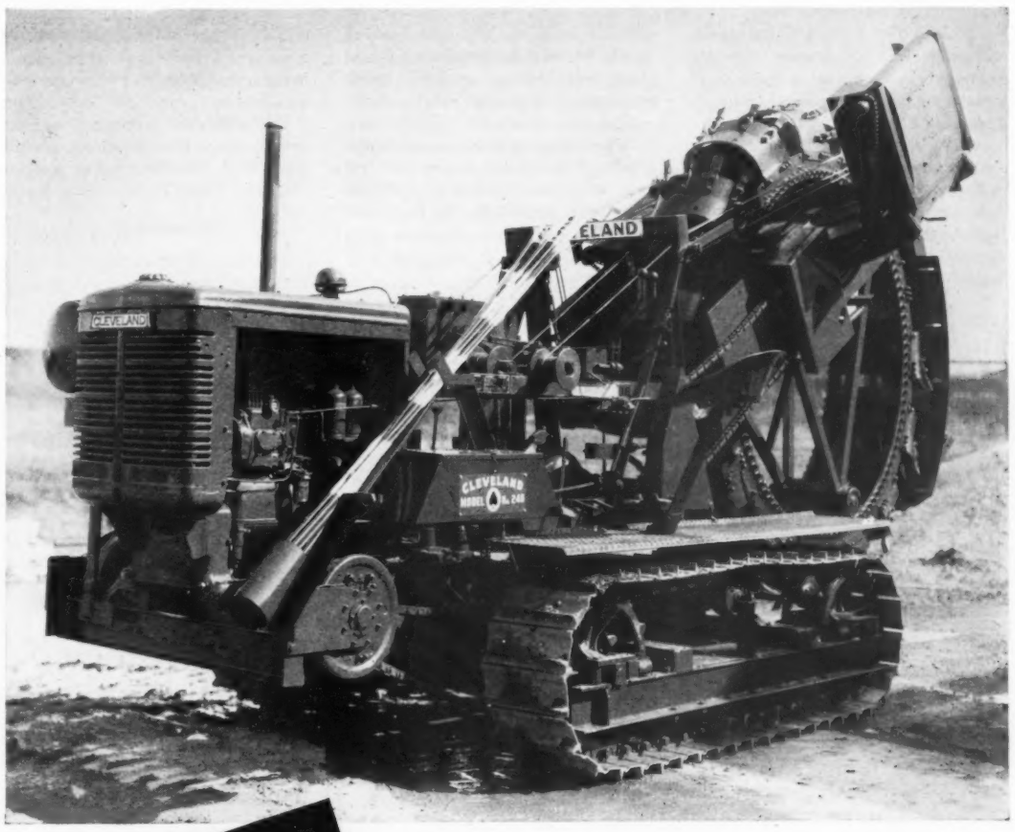
Improved Power Trowel For Concrete Finishing

■ The new Mullen power trowel for finishing concrete surfaces features a V-belt clutch that prevents the blades from going into action before the engine is adjusted to the desired speed. Engine speed is regulated by a governor control on the handle. A stationary ring guides the power trowel during finishing operations along a baseboard.

A Timken - bearing - equipped spindle shaft and the use of abrasion-resistant steel for the blades are further features. Interchangeable blades for float and finishing work are furnished. Blade pitch is adjustable.

The Muller power trowels are equipped with a Briggs & Stratton 1¾-hp engine for the 29-inch, and a 2¼-hp engine for the 34-inch model.

For further information write to the Muller Machinery Co., Inc., P. O. Box 248, Metuchen, N. J., or use the Request Card at page 18. Circle No. 39.



A Great New CLEVELAND

The Model 240

DIGS 20"-36" WIDE, DOWN TO 6'3" DEEP

● This powerful new trencher possesses all the famous time-proved CLEVELAND advantages—plus valuable new features that make it the finest trencher of its size and capacity ever built.

It is built to deliver—*is now delivering*—outstanding digging performance...

For Trench Work of Every Kind
PIPELINES • UTILITIES • DRAINAGE • IRRIGATION, ETC.

Ask Your Local Distributor for Bulletin S-119, or Write:
THE CLEVELAND TRENCHER CO. • 20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

CLEVELAND

Precast concrete units are rotated on turntable and wrapped lengthwise with high-strength wire in

New Prestressing Development

As a concrete roof beam is rotated on a powered turntable, high-strength wire, under tension, is wrapped around it. This new method of prestressing, the Preload-Crom system, was used at a Rhode Island naval installation. *C&E Staff Photos*

One Of The most promising developments in prestressed concrete to appear recently is a method of prestressing beams and other linear members by wrapping them lengthwise with high-strength steel wire under tension.

Based on the principles used in the circumferential prestressing of tanks, the beam-wrapping system has several advantages over conventional prestressing. It not only eliminates costly anchorages, bearing plates, placing of prestressing elements, and interior grouting, but it makes possible prompt fabrication of special-size members.

Two methods are used to apply the wire. For beams under 50 feet long, the precast unit is mounted on a powered turntable. As the beam rotates, it pulls the wire through a die and wraps itself in a spiral pattern. For beams over 50 feet in length, a specially rigged straddle truck rides back and forth over a beam, wrapping it at the required tension.

Full rights for using the method, known as the Preload-Crom system, have been granted to the Preload Co., Inc., New York.

Prestressing Job

The largest wrapping job on a turntable in this country was completed recently at the U. S. Naval Construction Battalion Center, Davisville, R. I. During the construction of a drill hall and warehouse, a change was made in the design of the roof beams after about 120 beams had already been cast. The change required that the 120 members be strengthened before being erected. Several methods were reviewed, and the navy finally decided on wrapping.

Drilling and belling

CAISSON PIER HOLES

Up to 40% has been saved in drilling and belling caisson pier holes with Calweld Earth Drills as compared with old digging methods. Calweld Model 150-A drills holes from 16 to 84 inches in diameter to depths of 200 feet, removing 21.5 cubic feet of earth per pass.

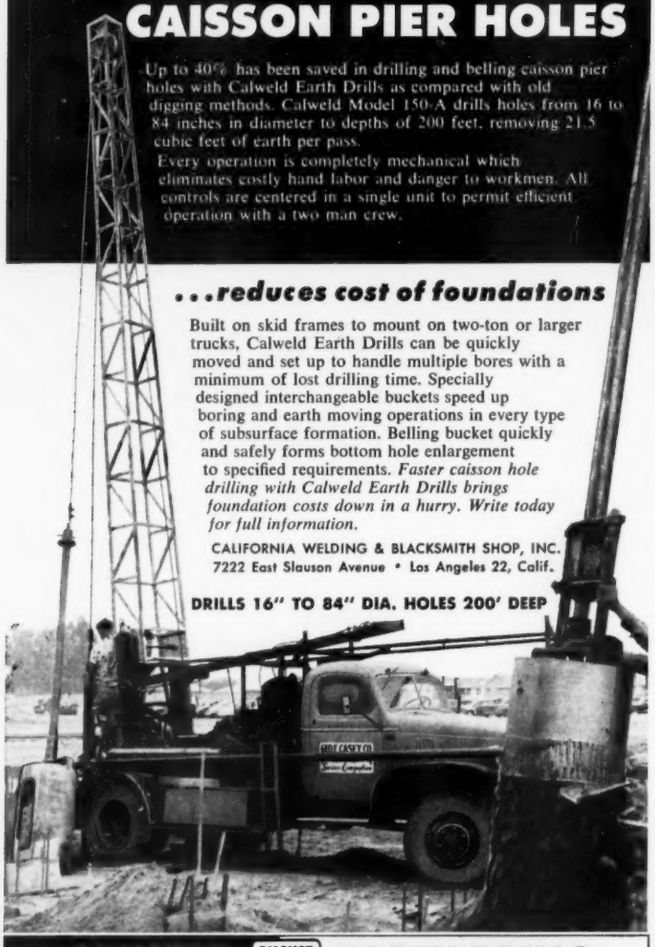
Every operation is completely mechanical which eliminates costly hand labor and danger to workmen. All controls are centered in a single unit to permit efficient operation with a two man crew.

...reduces cost of foundations

Built on skid frames to mount on two-ton or larger trucks, Calweld Earth Drills can be quickly moved and set up to handle multiple bores with a minimum of lost drilling time. Specially designed interchangeable buckets speed up boring and earth moving operations in every type of subsurface formation. Belling bucket quickly and safely forms bottom hole enlargement to specified requirements. *Faster caisson hole drilling with Calweld Earth Drills brings foundation costs down in a hurry. Write today for full information.*

CALIFORNIA WELDING & BLACKSMITH SHOP, INC.
7222 East Slauson Avenue • Los Angeles 22, Calif.

DRILLS 16" TO 84" DIA. HOLES 200' DEEP



CALWELD BUCKET TYPE **EARTH DRILLS**

... over better roads

built with Cummer Asphalt Plants

Since 1895 Leading Contractors Have Depended on Cummer Plants for Profitable Highway Construction and Improvement

Cummer Asphalt Plants are designed and built to make money for their owners — through fast, efficient, dependable production.

Cummer Engineering, the result of almost sixty years' experience devoted exclusively to asphalt plants, insures profitable efficiency.

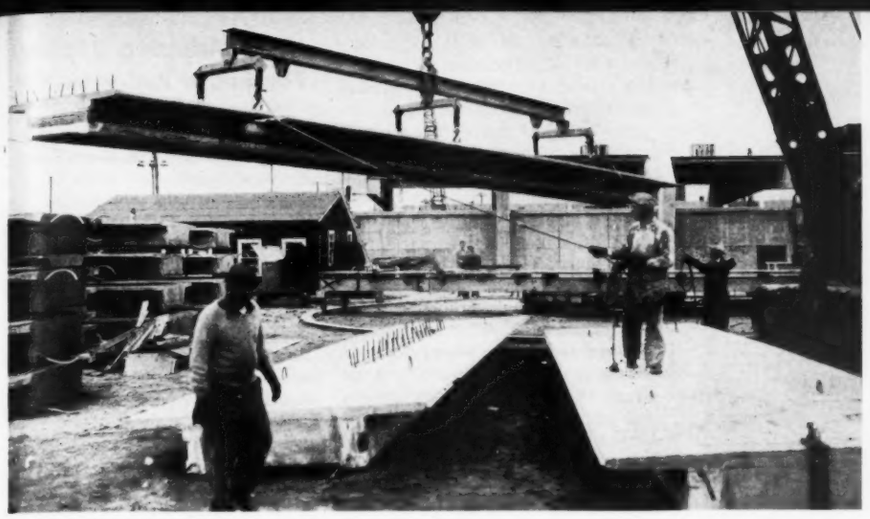
And the rugged construction of Cummer Asphalt Plants means greater dependability, less down-time, a minimum of repair and maintenance costs. When replacement parts are needed, Cummer service is exceptionally prompt and helpful.

Typical of today's Cummer Asphalt Plants is the stationary plant pictured at the top, right, purchased by Standard Asphalt and Paving Co., Cleveland, Ohio. This complete plant, with a capacity of 100 tons per hour, includes dust collecting system which discharges reclaimed dust into hot elevator and the latest in Cummer developments for reducing operating costs and upkeep time —the new Roller Path and Horizontal Tangential Chain and Sprocket Drive on the large-capacity dryer.

An entirely new illustrated Cummer Catalog has just been issued. Shows types of asphalt plants, gives complete specifications, information on component parts and additional equipment and accessories. Write for your copy today.

CUMMER

THE F. D. CUMMER & SON CO.
1827 EAST 18TH STREET
CLEVELAND 14, OHIO



A wrapped beam is lifted from the turntable and stockpiled by a Manitowoc crane. Approximately 15 minutes was required to place the beam on the turntable, coil the wire around it 20 times, and move it to the stockpile. Preload Construction Corp. did the prestressing for the Navy.

Wires on the stockpiled beams are coated with a 5/8-inch layer of Gunite which protects them against corrosion and provides bond. After a curing period, the beams were ready for use.

Most of the original 120 units were about 42 feet long and were shaped like a double T-beam. The flange, or slab section, was 8 feet wide and 3 inches thick. The two stems were 14 inches deep, 8 inches wide, and spaced at 4 feet, center to center.

Preload engineers determined that 20 wraps of .192-inch-diameter wire would provide the required prestressing, without counting on the reinforcing steel already cast in the beam. To prepare a beam for wrapping, the field crew first placed a precast block between the stems at each end of the beam. In addition, the four right-angle corners had to be chipped down and covered with curved metal plates to provide a smooth bearing for the wires.

Turntable

The steel turntable consisted of a 50-foot-long timber-deck platform, mounted on a 14-foot-diameter frame that revolved about a center shaft. Power was supplied by a Le Roi 50-hp gasoline engine and transmitted by a roller chain. The thrust of the turntable was taken up by 10-inch steel wheels, traveling horizontally against one side of a curved angle. The ends of the platform were supported on casters that rode on a steel-plate circular track.

Wrapping

The wrapping method was both simple and inexpensive. Beams were set on the platform with a Manitowoc crane and wedged tight to keep them in place during the wrapping. A looped end of the Roebling wire was then bolted to the side of the beam. The power was turned on, the beam rotated, and the wire was pulled through two carbide-covered dies that reduced the initial

DON'T LET OLD MAN WINTER SLIP UP ON YOU!

. . . . . GET REAL CONTROL OF ICE CONTROL!

PUT HI-WAY SPREADING EQUIPMENT TO WORK

HERE'S THE "DUO POWER" MODEL E—THE NEW LEADER IN MATERIAL SPREADERS GIVES YOU:

- A metered spread
- Adjustable width of spread 3' to 70
- Forward or reverse spreading without shifting
- Cab controlled operation
- Spreading at speeds up to 35 MPH
- Conveyor output controlled by positive truck drive shaft drive
- Distributor Disc driven hydraulically
- Accurate spreading of salt, sand, cinders, calcium chloride

HI-WAY MODEL DD—an all-season, low-cost portable tail gate spreader mounts on standard dump body, powered by rugged gas engine.

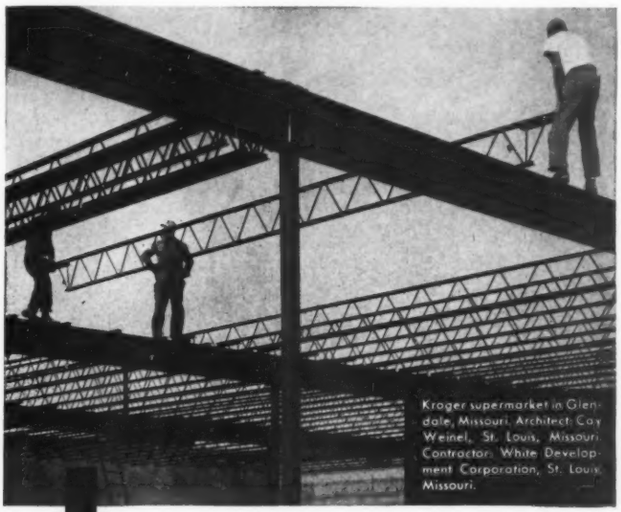
Get more information on the complete *New Leader line* of spreaders. There's a size for every need as well as gas engine or power take off driven models.

HIGHWAY EQUIPMENT CO. Inc.

641 D Ave., N.W., Cedar Rapids, Iowa

BULK FEED and GRAIN BODIES
LIME and FERTILIZER SPREADER
SELF UNLOADING TRANSPORT
MATERIAL SPREADERS TRACTION-TAILGATE-TRUCK MOUNTED

MANUFACTURER OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS AND BULK DELIVERY EQUIPMENT.



Kroger supermarket in Glendale, Missouri. Architect: Coy Weinel, St. Louis, Missouri. Contractor: White Development Corporation, St. Louis, Missouri.

EASY DOES IT

. . . with lightweight, versatile

LACLEDE STEEL JOISTS

Fast placing and erection . . . combined with modern design and strength make Laclede Steel Joists the answer to today's needs in roof construction.

Specify these LACLEDE Products:

Multi-Rib Reinforcing Bars • Steel Pipe • Welded Wire Fabric

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Producers of Construction Steel

LACLEDE STEEL COMPANY

St. Louis, Mo.

diameter of .192 inch to .176 and then .172. The initial stress was 140,000 psi.

As the beam rotated, the wires were placed in predetermined positions by deflectors at each end. When the 20 wraps were made, the turntable was stopped and the final wrap was clamped to the previous one. The wire was then cut and the beam removed and stockpiled. About 15 minutes time was required to place, wrap, and remove a beam.

After the beams were stockpiled, the wires were covered with a ⅝-inch coating of Gunite to prevent corrosion and provide bond. Sand and cement were mixed in a Rex mixer and carried up to a hopper by an air-powered conveyor. Below the hopper a Gunite machine, supplied with air from a Chicago Pneumatic 315-cfm compressor, forced the mix to the gun.

Personnel

F. Stinton was superintendent for the Preload Construction Corp., which is headed by J. Closner, vice president of the Preload Co. R. Beiner and R. Magers were equipment development engineers with Preload. Lt. Commander J. L. Cross was resident officer in charge of construction for the First Naval District. THE END

Bowstring Timber Trusses In Three Typical Designs

■ Three typical designs of segmental bowstring timber trusses, having spans of 30, 40, and 50 feet, have been completed for the construction industry by the Timber Engineering Co., 1319 18th St. N. W., Washington 6, D. C. The new designs are the first of a series of eight typical timber truss suggestions being prepared by TECO engineers to serve as guides for architects, engineers, and builders planning their light and heavy-construction jobs in timber. Copies of the designs are available from the company.

Although similar to the Lank-Teco designs in general appearance, the new 30 and 40-foot designs, Nos. 626 and 627, differ in that they use butt top chord splices, eliminate the use of steel rods, and have greater depth. The new 50-foot design, No. 628, has more of the general appearance of a bowstring truss.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 28.

IAGS Mapping Report For South America

The job of gathering mapping data to produce accurate topographic maps and nautical and aeronautical charts of Central and South America has made considerable progress, according to Col. Robert R. Robertson, director of the Inter-American Geodetic Survey, who recently conferred with the Army Map Service and other governmental agencies in Washington concerning the program. Maps based on information being obtained will not only aid South American countries in reclamation, irrigation, hydroelectric, and highway projects, but will be of value militarily.

Since the survey started in 1946, it has established primary horizontal control along 39,000 of the required 90,000 miles of arc. The survey's main arc ties into one in the U. S. and continues on to Point Barrow, Alaska, for a total length of 10,000 miles. Believed to be the longest arc in existence, it will be used to compute more accurately the shape of the earth. The survey, also correcting some inaccuracies, is charting the 120-mile-long range of mountains which lies less than 60 miles from the canal zone and fixing the position of mountains and major rivers which were found to be as much as 40 miles out of position on existing maps.

The IAGS, working as a major subordinate command of the U. S. Army, Caribbean, is staffed by officers and civilian engineers from the U. S. Army Corps of Engineers. The field organization, spread over 12 million square miles, works in every type of climate and terrain from the tropical jungles of the Amazon Basin to the high peaks of the Andes.

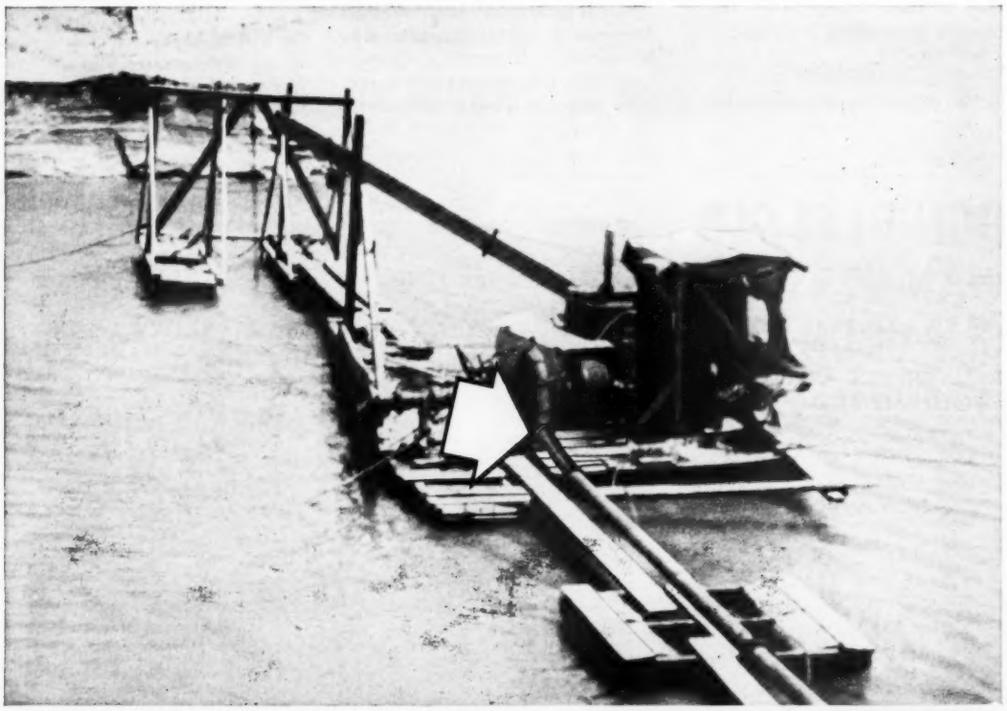
New Nylon Tire Cord

■ A method of chemically treating the nylon cord and putting it through a triple tempering process has produced an improved nylon tire cord, according to the Goodyear Tire & Rubber Co., Akron 16, Ohio. This process controls the normal stretching of the nylon cord and makes it possible to take advantage of the fiber's strength, lightness, and its power of resistance to heat and fatigue.

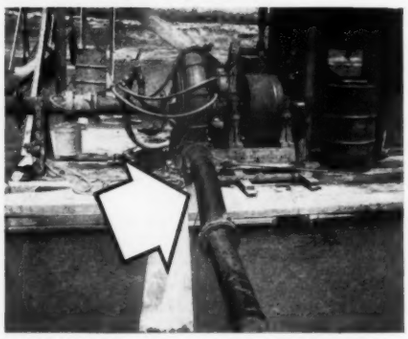
According to the company, road tests show that cord fabric treated in this manner reduces tire growth and tread cracking, increases tread mileage and bruise resistance, and is more heat resistant.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 4.

Dredging for sand with the help of U. S. Rubber's Giant Sand Suction Hose and Giant Dredging Sleeves



Wet, heavy, bulky, the sand requires strong vacuum to draw it through the suction hose. Only the highest quality tube can withstand the sand's cutting action, plus the jolting of extreme suction and the constant movement of the barge or pontoons. United States Rubber Company carefully engineered the hose to meet these operating conditions. The particular job shown above uses U. S. Giant Sand Suction Hose and U. S. Dredging Sleeves—while U. S. LPG Hose conveys LPG to the pumping equipment. These are examples of the "U. S." quality products that are paying off hour by hour in every type of construction work—because they *have greater durability, allow men to work without interruption and delays.* These products can be obtained at any of the 27 "U. S." District Sales Offices, or any selected "U. S." distributor. Or write to address below.



This close-up shows that U. S. Giant Dredging Sleeve acts as an elbow to take the rise and fall of water and the vibration of pumping equipment to prevent the pipe from tearing loose and stopping production.

"U. S." Research perfects it.
"U. S." Production builds it.
U. S. Industry depends on it.

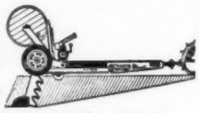
US RUBBER

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes
Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

Lay Cables
(Telephone & Electric)
at low cost
120-150 FEET PER MINUTE

USE Ryan Wire and Cable Layer



Pulled by a Caterpillar Tractor
Write for details
F. B. RYAN • Chariton, Iowa

Device Drives Posts And Breaks Concrete

■ Tractor power is used to drive posts, tamp soil and gravel, and break concrete with the Danuser driver and breaker—newest addition to the Dearborn equipment line, according to the Tractor and Implement Division, Ford Motor Co., 2500 E. Maple Road, Birmingham, Mich. A single lever controls the 200-pound drive weight on the unit through its complete operating cycle. Striking 25 blows per minute, the machine will drive steel or wood posts up to 8 feet long and 6 inches in diameter. It attaches to the Ford tractor's three-point hitch and is power-takeoff driven.

Among uses of this tool are driving wood or steel guardrail posts; driving snow fence posts; tamping soil or gravel; and breaking concrete walks, driveways, and roadways.

For further information write to the company, or use the Request Card at page 18. Circle No. 94.

Heavy Steel Plates Available From Stock

■ Through its comprehensive warehouse stock of heavy plates, the By-Products Steel Co., a division of Lukens Steel Co., Coatesville, Pa., offers heavy steel plate ranging from ½ to 15 inches thick for immediate delivery. Plate can be shipped full size or flame-cut within close tolerance to specified sizes and shapes.

Current sizes range from ½-inch plate, measuring 200 x 100 inches, to 15-inch plate, measuring 140 x 80 inches. Tensile strengths of different specifications range from 55,000 to 85,000 psi. A reference folder of listings is available on request.

To obtain this data write to the company, or use the Request Card that is bound in at page 18. Circle No. 1.

Kern Establishes U. S. Factory Representative

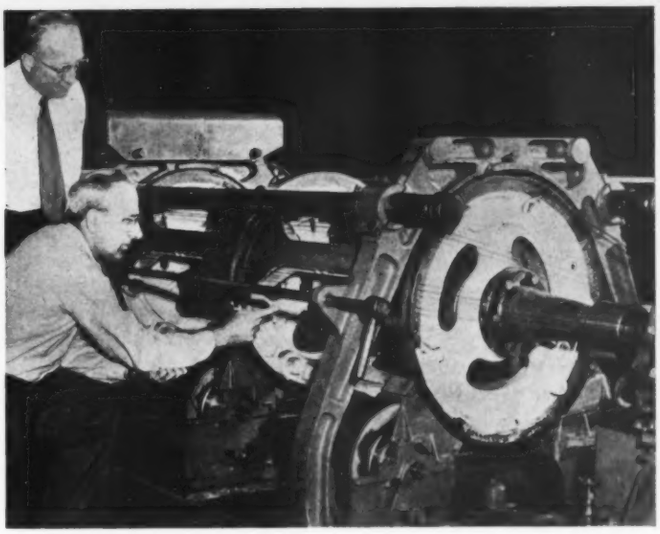
Kern & Co., Ltd., Aarau, Switzerland, manufacturer of Kern precision surveying and drawing instruments, is now represented in this country by Kern Instruments, Inc., 120 Grand St., White Plains, N. Y. The office incorporates showrooms and complete service and repair facilities staffed by factory-trained technicians. The new representative will handle all company business formerly done by the Kern Instrument Division of Paul Reinhart Co., New York, N. Y.

Hans Winkler is the president of the new firm, and Florian E. Davatz is executive vice president and sales manager.

Invest In

U. S. DEFENSE BONDS

Now Even Better



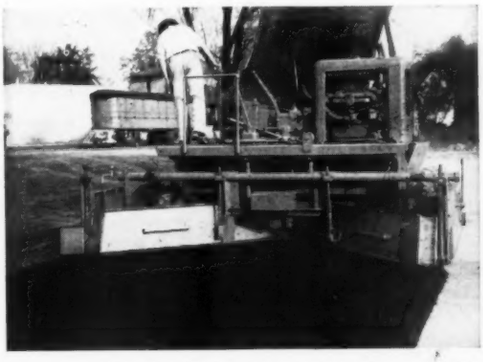
WITH THIS NEW high-speed wire-stranding machine, production of flexible wire rope for excavating shovels, cranes, and various types of hoists will be accelerated in the wire rope division of John A. Roebling's Sons Corp., Trenton, N. J., a wholly owned subsidiary of the Colorado Fuel & Iron Corp., New York, N. Y. The machine, driven by a 150-hp engine, twists from 26 to 46 separate wires into strands for the fabrication of wire rope up to 1⅝ inches in diameter. This rope will lift weights up to 25 tons.

Up goes tonnage . . . down go costs

Jaeger Paver-Type Aggregate Spreader accurately places materials as fast as trucks can deliver

Only 45 seconds to place 8-ton loads of coarse stone on Pennsylvania project. 1300 tons per 10 hrs. included 4½ hrs. waiting time on Massachusetts circumferential highway. In one pass, spreader evenly lays up to 10″ depth of coarse aggregates, without hand labor. Accurate spreading is insured by carrying strike-off on floating straightedge runners, which equalize subgrade irregularities.

Accurately spreads 210 cu. yds. per hr. of dry macadam for West Coast jet bomber runway base. Places up to 12″ thickness of fine or graded materials to 11′ width, or equal volume in lesser thickness to 12′6″ width. Width changes are made by easy telescopic adjustment. Traction is always on subgrade, to avoid displacing newly-laid material. Has ample capacity to push loaded material trucks.



Top course for secondary roads, parking lots. Accurately lays both base and surface aggregates and any free-flowing hot or cold bituminous mixture. Its low cost and simplicity also makes the Jaeger spreader highly practical for use by smaller contractors on parking areas or drives (costs half the price of bituminous pavers). Blends perfect joints, can lay flush to curbs, headers.

18″ of stiff mix placed true to grade, in three 6″ courses. 3000 to 3800 tons per day of sticky crushed limestone and calcium chloride mixture placed by tandem Jaegers on Tennessee super-highway—with unused capacity of 1000 tons per machine due to waiting time. In North Carolina, two spreaders placed over 2000 tons per day of plant-mix so sticky pneumatic-tired rollers had to be used. Two spreaders can lay to 25′ width.

Two sizes, to fit your trucks. For complete information, see your Jaeger distributor or write for Catalog SPS-4.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue — Columbus 16, Ohio

LOADERS • PUMPS • AIR COMPRESSORS • TRUCK MIXERS • CONCRETE MIXERS

This 42-inch troughing-type elevator is available for Adams motor graders.

Trough-Type Elevator For Motor Graders

■ A new 42-inch troughing-belt-type carrier has been added to the line of Elegraders for Adams motor graders. The new Reisser unit features a large 32-inch disk, a heavy plow beam, a low carrier assembly, and hinge carrier for mobility.

An extended lower-lip design prevents the disk from cutting the belt in all operating positions. It also mechanically prevents foreign objects picked up by the disk from striking the belt broadside.

To improve belt control, the outside troughing rollers are extended forward to center the belt under load for uphill and downhill operation. All lower carrier troughing rollers and cone rollers offset the belt travel under load. All return rollers have reversible scraper blades for operation in wet soil conditions. Protective return roller guards keep brush and tap roots from being pulled into the belt on the return side of the carrier.

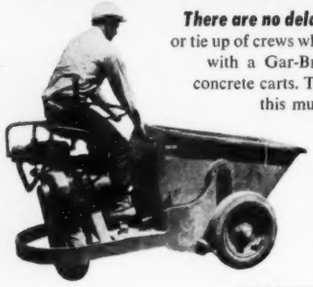
For further information write to the Reisser Corp., Blair, Nebr., or use the Request Card at page 18. Circle No. 117.

Laclede Fills Sales Post

Laclede Steel Co., St. Louis, Mo., manufacturer of steel construction materials for buildings and highways, has appointed Charles S. Rogers manager of southern sales. With the company since 1919, the new sales manager has held various executive positions.

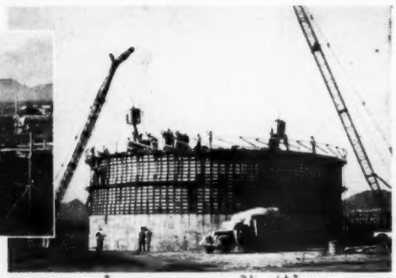
Simultaneously it was announced that a new Laclede plant, in Memphis, will be opened this fall.

Proper Placement Promotes Profits



There are no delays on this job—no waiting for concrete or tie up of crews when the concrete placing job is equipped with a Gar-Bro concrete bucket, floor hopper and concrete carts. They are basic tools of the industry. On this municipal stadium job 420 cu. yds. were placed in 10 hours.

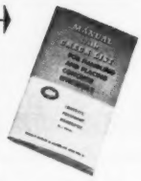
When bucket and crane could not reach the center of a reservoir floor, a fleet of Power-carts shuttled the concrete from a Gar-Bro Portable Hopper to the floor slab forms.



Contractor saves money by discarding fixed tremie stations and using movable Gar-Bro elephant trunks to chute concrete deep into wall forms. Gar-Bro 1-yd. buckets and collection hoppers were used.

40 ft. under water, concrete was placed with a special 4 cu. yd. Gar-Bro bucket converted by addition of a crown top. Gate was air-operated by remote control from barge.

Write for 60-page Concrete Handling Manual — *Includes useful tables, references, correct and incorrect methods, unusual jobs solved and other data.*



EQUIPMENT GAR-BRO ENGINEERING SERVICE

GAR-BRO MANUFACTURING COMPANY
Los Angeles 21, California, 2415 East Washington Boulevard
Peoria, Illinois, 1600 North Adams

You get "ACTION" with a... ROGERS TRAILER

You get ACTION in loading and unloading because they are properly designed by long experienced specialists; you get ACTION in maneuverability because of correct weight and load distribution; you get ACTION in faster road travel because alloy steel main members assure lightness with strength; you get ACTION in controlling the trailer under all conditions due to massive brakes of advanced design. And above all you get ACTION on the profit side of the ledger in exceptional freedom from repairs year after year.

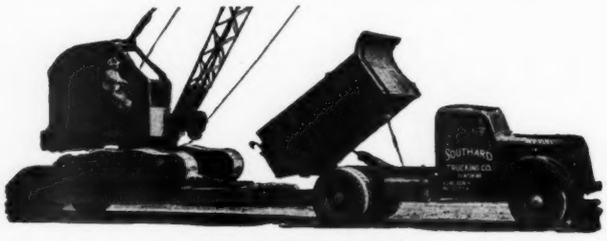
These features are embodied in a complete line of trailers including one specifically adapted for every hauling service. Write or phone for our large illustrated catalog.

YOU GET MORE FOR YOUR MONEY IN A ROGERS TRAILER

EXPERIENCE builds 'em — ROGERS HEAVY DUTY — PERFORMANCE sells 'em

ROGERS BROS. CORP.
ALBION, PENNA. CABLE: BROSITES

Export Office: 50 Church St., New York 7, N. Y. U. S. A. Cable Address-Brosites



Attaching loaded tilt deck trailer

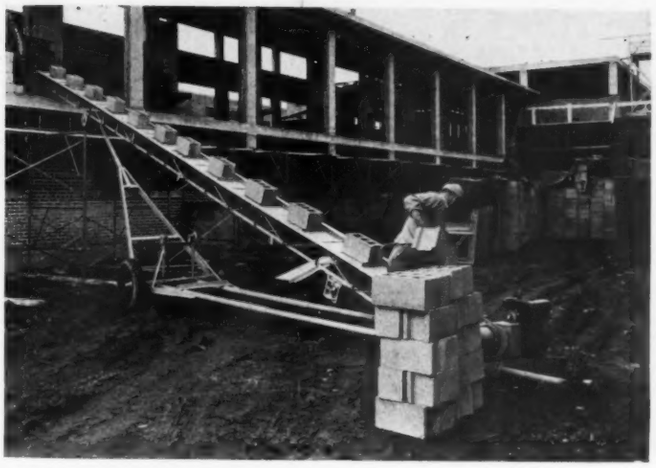
Flat-Top Conveyor Has Power-Boom Hoist

■ A flat-top builder's conveyor with a power-boom hoist is announced by The Marion Mfg. Co., Marion, Ohio. The Marion Mule conveyor handles bricks, blocks, mortar, lumber, gypsum, roofing, insulating material, corrugated sheets, pea gravel, and other building materials.

The flat top elevates building materials less than 16 inches in width within the trough on chain carrier bars. Wider pieces such as window frames, roofing, and siding, are supported by the flat channel sideboards as they are carried up to the desired height by the chain flights. These flights are varied in height to take lumber 10 feet and longer.

By the addition of one or two 8-foot boom sections, the 24-foot base machine can be converted into a 32, 40, or 48-foot conveyor.

For further information write to the company, or use the Request Card at page 18. Circle No. 52.



The Marion Mule builder's conveyor.

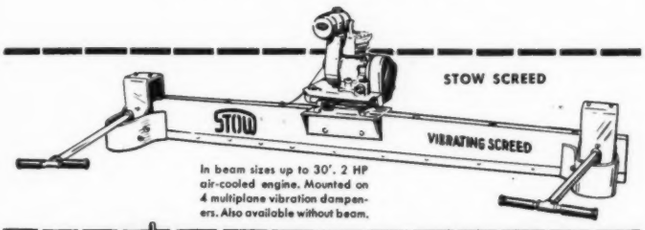
Data on Expansion Joint Containing Glass Fiber

■ A brochure describing the physical makeup and application of Fiberglas expansion joint has been prepared by the Owens-Corning Fiberglas Corp., 1833 Nicholas Bldg., Toledo 1, Ohio. The booklet contains complete information concerning expansion-joint application on highway and similar projects.

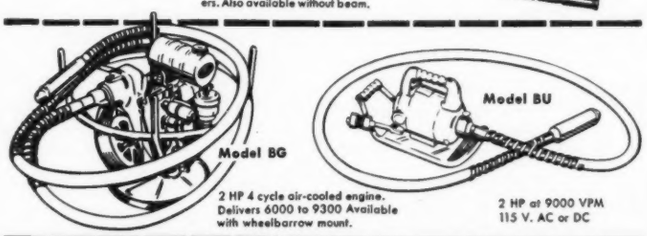
Weight tables, widths, and thicknesses are included in the booklet.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 98.

Concrete facts about Concrete Vibrators and Screeds

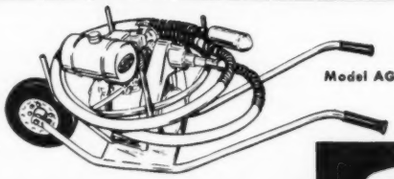


In beam sizes up to 30'. 2 HP air-cooled engine. Mounted on 4 multiplane vibration dampeners. Also available without beam.



2 HP 4 cycle air-cooled engine. Delivers 6000 to 9300 Available with wheelbarrow mount.

2 HP at 9000 VPM 115 V. AC or DC



4½ HP 4 cycle air-cooled engine. Mounted on wheelbarrow for easy maneuverability. Delivers 6000-9300. Available without wheelbarrow.

Here is the name you want!

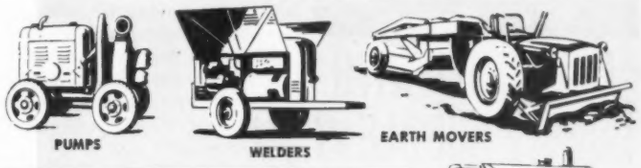
STOW

The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so *attachments may be used directly on the vibrator shafts.*

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

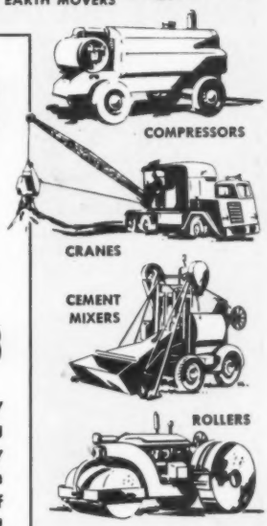
See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.

STOW MANUFACTURING COMPANY
40 Shear Street Binghamton, New York



MORE POWER TO YOU

AND BETTER POWER FOR EVERY CONSTRUCTION JOB



When choosing construction machinery of any kind, remember this: the leading makes of specialized equipment for every operation from excavation on through final grading offer the plus value of dependable Red Seal* power. And Red Seal means plus value, because every model, no matter in what machine you find it, is engineered with the needs of that machine in mind—built to do one job and do it well. The Red Seal line, from 2 to 1040 h.p., is backed by parts and service coast to coast.

CONTINENTAL MOTORS — Powerful as the Nation — AMERICA'S STANDARD

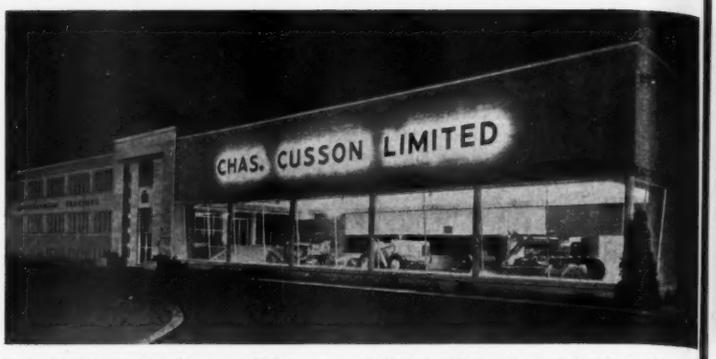
*TM REG.

1819 BROADWAY, NEW YORK 23, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 910 S. BOSTON ST., ROOM 1008, TULSA, OKLA.
1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

Canadian Dealer Covers Far-Flung Territory

Serves Province of Quebec with machines, parts, and repairs in step with Canada's construction boom



In the 5,000-square-foot showroom which runs across half of the 225-foot front of the Montreal headquarters of Chas. Cusson, Ltd., International-Harvester construction equipment is prominently displayed.

CANADA'S AGRARIAN economy today is making still more room for the surge of industrial development that had its beginnings immediately after World War II. The discovery of vast oil reserves and rich uranium deposits in the dominion, while overshadowing other phases of this postwar boom, were only two of the developments creating a need for increased construction of various types. Concurrent with the boom in building was the job of setting up dealerships with far-flung lines of service capable of handling calls for equipment, parts, and repairs.

One of the largest and more diversified of these is Chas. Cusson, Ltd., the International-Harvester distributor in Montreal. Founded almost nine years ago, the company today conducts operations which reach over the entire province of Quebec. Cusson employs 225 persons, 175 of whom work in the main office in Montreal. The remainder are scattered in branch offices in Quebec City, Rouyn, Jonquiere, and Rimouski. The operation of the company is completely separate from Cusson Freres, a firm manufacturing the Willett Underbody truck graders and offering sales and service on Bendix-Westinghouse vacuum air brakes.

In addition to the large headquarters and showrooms in Montreal, Chas. Cusson, Ltd., operates a parts department stocked with 63,000 items, a service and repair shop where virtually every type of machine can be handled, and a mobile school which trains contractors' employees in the care and handling of equipment.

Headquarters for this I-H dealer is a reinforced-concrete building, 570 feet long and with a frontage of 225 feet, located on a 7-acre tract near the city of Montreal. Housing the main offices as well as the 5,000-foot-square showroom, the $1,250,000 structure was designed by Gaston Gagnier and built by Anglin Norcross Corp., Montreal. Structural and mechanical engineers on the building, respectively, were Brouillette & Carmel and Leblanc & Montpetit, both of Montreal.

Sales and administration offices take up 10,000 square feet of floor space on two floors of the building. Ten salesmen work out of the Montreal office; eight men work from branch offices. From the general office, 30 persons handle the 3,500 invoices which are sent out monthly.

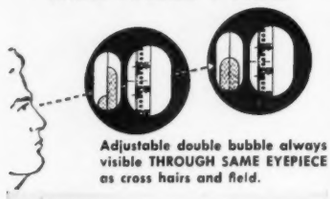
Parts Service

The company's parts department runs with the precision of a well oiled and constantly tended machine. In the 25,000-square-foot department and the 10,000-square-foot warehouse at Montreal are some 40,000 parts, which are drawn on by 40 employees filling approximately 3,000 orders each month. A total of 10,240 parts bins are kept filled, as is the 10,000-cubic-foot rack space, so that orders can be handled quickly.

To facilitate shipments, stocks of parts from any of the four branch departments can be sent to customers. Direct teletype keeps the Montreal office in communication with all branches, helping to reduce the time needed to ship equipment. The Quebec City department maintains 8,000 individual parts, while Rouyn, Jonquiere, and Rimouski each stock 5,000 items. Altogether, the Montreal and branch office parts departments have 63,000 parts available for shipment at any time. Connecting the parts section with the

SURVEYING NEWS

NEW LEVEL WITH DOUBLE BUBBLE IS "MISTAKE-FREE"



Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.

- No need to turn telescope during leveling
- No need to look anywhere but through telescope to adjust level at any turn after initial set-up
- American type — erecting eyepiece, 4 leveling screws
- Unbelievably fast and accurate, yet simple-to-use. Economical!

Mail this coupon for details

FENNEL

INSTRUMENT CORP. OF AMERICA
11-27 44th Rd., LONG ISLAND CITY, N. Y.

Please send me Booklet D with information on Fennel . . .

☐ Double bubble ☐ Alidades
☐ Other levels ☐ Callimeters
☐ Transits ☐ Stands
☐ Combinations ☐ Tripods
☐ Theodolites ☐ Repair of my present instruments

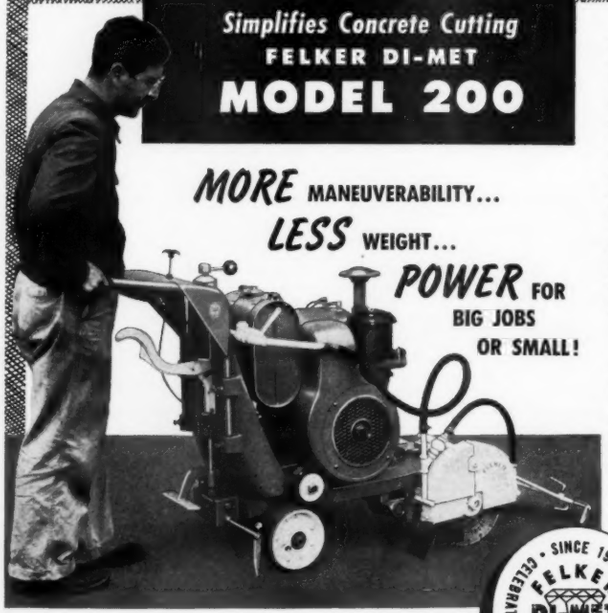
NAME.....

ADDRESS.....

.....

Simplifies Concrete Cutting
FELKER DI-MET
MODEL 200

MORE MANEUVERABILITY...
LESS WEIGHT...
POWER FOR BIG JOBS OR SMALL!



This NEW Felker DI-MET CONCRETE CUTTER meets *all* cutting requirements at LOW COST! Takes deep cuts and covers the footage of *big* machines, yet handles as easy as a baby buggy. Light weight means more maneuverability on close-ups, easier loading for fast transportation. Holds straight and true on long stretches. Uses economical 10" or 12" blade sizes. Cuts up to 3¾" deep with 12" blade. 13.5 h.p. Wisconsin engine provides ample power *even for 14" blades* and deeper cuts (by equipping with special blade guard). Hydraulic lift raises blade from cut, velvet-smooth hydraulic retardant eases blade into concrete—saves wear, increases blade life.

ADD ACCESSORIES AS YOU NEED THEM!

This new DI-MET Model 200 is available as a BASIC UNIT or may be purchased with additional accessories. POWER DRIVE and COOLANT PUMP ASSEMBLIES can be field installed. STARTER, GENERATOR and BATTERY must be ordered with the ENGINE. Choose what you *need*, buy what you *want!*

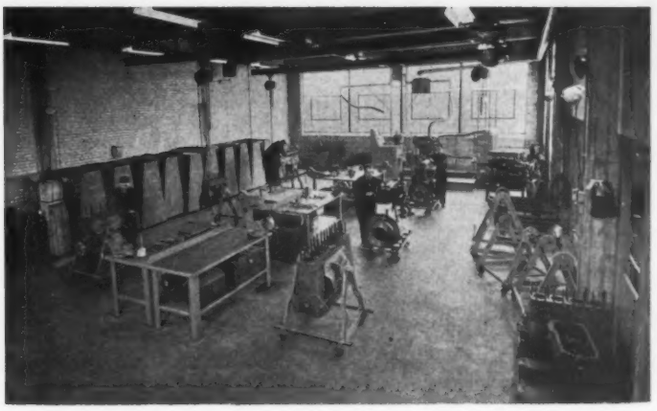
Many other exclusive features —ask for circular!

CELEBRATING OUR 30th ANNIVERSARY • SINCE 1924 • FELKER DI-MET

Made by the *only* manufacturer building both CONCRETE CUTTING MACHINES AND DIAMOND WHEELS . . . the winning combination that means *more* footage at *less* cost!

FELKER MANUFACTURING CO.
TORRANCE • CALIFORNIA
World's Largest Manufacturer of Diamond Abrasive Cut-off Wheels and Machines

About 3,000 orders are sent out from the parts-shipping department in Montreal each month. The main department is linked to branch parts departments by teletype to expedite shipments to contractors in the province.



International diesel engines, rebuilt in this shop, are accompanied by written guarantees on trade-in sales. Rebuilt engines can be delivered anywhere in the province of Quebec within 24 hours after an order is placed.

cashier's office, the main office, and the plant is a pneumatic-tube message system. Inventory control is maintained by four Vari-Visible units.

Equipment Servicing

In the 30,000-square-foot maintenance and repair department are specialized sections where all types of I-H construction equipment are repaired or rebuilt. The engine-remanufacturing section is staffed by eight men who can rebuild International diesel engines of any size. These rebuilt engines are sent to stock where they are kept until ordered. The Cusson Engine Remanufacturing and Exchange Service, drawing on this stock, can deliver one of its precision-rebuilt machines anywhere in the province within 24 hours. All engines are accompanied by a written guarantee that the rebuilt unit will equal the performance of a new engine of similar type and size. Trade-in allowance is given to a customer on the replaced unit.

The total effect of this service is to cut engine downtime by more than 90 per cent for contractors in Quebec. A Clayton hydraulic-electric dynamometer, simulating actual running conditions of the engines as well as measuring power developed

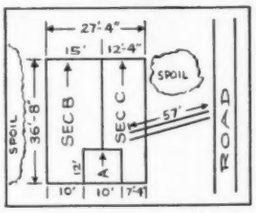
(Continued on next page)

Links for International tractor track chains are installed in Cusson's maintenance department on this Rodgers hydraulic press. This is one of the many specialized sections in the organization's repair department.

(Advertisement)

4 Basements Dug In 9 Hours and 25 Minutes

Young and Dietrich, new, aggressive excavating contractors in Painesville, Ohio, were awarded a contract recently to dig 10 basements and sewer trenches in a new small-home development. A time study was made of the first 4 basements — they were all dug in 9 hours and 25 minutes with a Lorain TL25-J Hoe using a 36" wide, ⅝-yd. bucket. The excavations varied slightly in size, but here are figures on one basement.



Dimensions ....36'8" x 27'4" x 5' deep

Sewer

Sewer Line 57' long x 3' wide x 8' deep.
Start Sewer Line .....11:56 A.M.
Delays ..... 55 mins.
Finish Sewer Line ..... 1:50 P.M.

Total ..... 114 mins.

Basement

Start Section A ..... 1:55 P.M.
Finish Section A ..... 2:15 P.M.

Total ..... 20 mins.

Start Section B ..... 2:35 P.M.
Delays
(backfill sewer trench) .. 10 mins.
Finish Section B ..... 3:55 P.M.

Total ..... 80 mins.

Start Section C ..... 3:57 P.M.
Finish Section C ..... 5:05 P.M.

Total ..... 68 mins.

Total for Basement No. 4 — 282 mins.

4 HRS., 42 MINS.
- Sewer actual digging time ..59 mins.
- Basement actual digging time .....2 hrs. 38 mins.
- Time to backfill sewer .....10 mins.
- Delays — Lunch .....30 mins.
- Searching for outlet .....25 mins.

Basement No. 1 was dug in 2 hours and 11 minutes plus 35 minutes delay for checking grade and installing water line.

Basement No. 2 took 2 hours and 15 minutes plus 37 minutes delay for checking grade and cleaning up cave-ins on basement No. 1.

Basement No. 3 consumed 2 hours and 21 minutes plus 27 minutes delay for discussion between operator and contractor.

As basement No. 2 is finished at 3:42 P.M. the concrete footers are already being poured for basement No. 1 which was finished just 3 hours and 43 minutes earlier.

The above figures were secured on actual on-the-job operations. Nothing was planned. Nothing was staged. Production figures like these make basement digging profitable. Lorain TL25 Hoes match them all over the world.

HERE'S HOW TO

"KEEP OUT OF THE HOLE"

WHEN YOU DIG BASEMENTS

You won't get in the hole on costs if you use a TL-25 Hoe for basement digging, because you can work from the top to cut straight sidewalls, trim square corners and grade level floors to reduce hand finishing. You can spoil pile in any direction, dig utility trenches, and forget the problems of building ramps and the high maintenance of constant travel that is necessary with some types of equipment. TL-25's consistently dig an average residence basement in 3 hours or less. And when you get other types of jobs, it is easy to change to a dragline, clamshell, shovel or crane front end to handle them profitably. Many contractors started their careers with this versatile machine that is so adaptable to their growing needs.

There are many reasons why a TL-25 will throw more dirt per day—at less cost. Call your Thew-Lorain Distributor today for the full story.

Thew TL Lorain

WILL KEEP YOU "ON TOP" OF PROFITS

Here's why! High-speed, balanced operating cycle, easy-to-service, hydraulic tread-travel lock, anti-friction bearings, 4 crawler sizes to choose from. Inexpensive to own. These are but a few!

THE THEW SHOVEL CO., LORAIN, OHIO

WRITE FOR HOE BOOKLET — showing many uses of Lorain Hoes of all sizes — on basements, sewer lines, utility lines — jobs that will make you money. Ask for Hoe Booklet.

THEW LORAIN

OFFERING MORE THAN 136 SHOVEL-CRANE COMBINATIONS ON CRAWLERS OR RUBBER-TIRES TO BEST FIT YOUR JOB FOR PROFIT!

(Continued from preceding page)

and fuel and lubricating oil consumed, is used in rebuilding engines in the shop.

A similar setup is in effect in the hydraulic department, where rebuilt hydraulic pumps are furnished to customers on an exchange basis. A hydraulic pump, which can test pump pressures up to 1,500 pounds, is used by the three-man staff to rebuild about 60 pumps each month. The fuel-injection department has a crew of five which rebuilds about 75 pumps and 300 injector nozzles every 30 days. The 38 exchange pumps stocked continuously cover every size of International diesel engine and are tested on a stand made by the English firm of Hardridge Co. before being sent along to stock.

Directly responsible for the monthly servicing of about 30 magnetos, 25 generators, 23 starters, and 21 carburetors used on International tractors and power units is the two-man electrical department. In another section nearby, a 100-ton Rodgers hydraulic press installs links for track chains. All types of electric and oxyacetylene welding are handled in the company's welding shop. Equipment cleaning is done in a separate department equipped with a Vapor car steam cleaner.

Work in all these departments is coordinated by the shop control office. There, seven employees have at their fingertips information on any job the company has done since it started in business. These records show work done on the machine, the new parts required, the cost of the job, and the date the unit was returned to the customer.

Service School

One of the unique features of the company is the service school it conducts for customers' personnel. Here, advanced instruction on maintenance and servicing of International tractors and allied equipment is provided without charge. Established two years after the company was founded, the school has to date given instruction to 4,000 mechanics, 1,500 of whom were given on-the-job training. The school operates on a mobile basis, covering about 1,400 miles annually, and uses sound movies, sound slides, and demonstrations to illustrate techniques in equipment care and operation.

Chas. Cusson, Ltd., has grown steadily with the increase in construction throughout Canada. Its anticipation of contractors' needs has brought the firm to its present size, and indications are that it will con-

DISTRIBUTORS

ALABAMA—Tractor & Equipment Co., Inc., 4428 First Ave. N., Birmingham 1; 660 Church St., Dothan; Ray-Brooks Machinery Co., 2276 W. Fairview Ave., Montgomery; P. O. Box 267, Mobile.

ALASKA—Western Tractor & Equipment Co., Box 2032, Anchorage; Box 407, Fairbanks.

ARIZONA—State Tractor & Equipment Co., 407 S. 17th Ave., Phoenix. Lively Equipment Co., Albuquerque, N. M.

ARKANSAS—Euclid-Arkansas, Inc., 708 W. Second St., North Little Rock.

CALIFORNIA—Geo. H. Philpott Co., Inc., 1040 Bryant St., San Francisco; 330 W. Maple St., Monrovia; Sierra Machinery Co., Inc., P.O. Box 1230, Reno.

CANADA—Dietrich Collins Equipment Ltd., 890 S. W. Marine Dr., Vancouver 14, B. C.; Ferguson Supply Alberta Ltd., Calgary, Edmonton and Lethbridge, Alberta.
G. H. Gosnell Equipment Ltd., 26 Jockey Ave., Toronto; P. O. Box 187, Port Arthur, Ontario; P. O. Box 69 NDG., Montreal, Quebec.
Maritime Newfoundland Agencies Ltd., P. O. Box 823, Halifax, N. S.

COLORADO—Colorado Builders' Supply Co., 1300 West Evans Ave., Denver.

CONNECTICUT—The W. I. Clark Co., 3168 Dixwell Ave., New Haven.

DELAWARE—L. B. Smith, Inc., Camp Hill, Penna.

FLORIDA—Florida-Georgia Tractor Co., 2900 W. Beaver St., Jacksonville; 2418 Rhode Rd., Lakeland; 2130 No. Miami Ave., Miami; 1400 S. Orange Blossom Trail, Orlando; Quincy Highway, Tallahassee; 210 S. 12th St., Tampa.

GEORGIA—Tri-State, Inc., 880 Glenwood Ave. S.E., Atlanta 1; East Side Highway, Bypass Circle Rd., Augusta; 712-14 Oglethorpe St., Savannah; 1 Capitol Sq., Albany.

HAWAII—Grace Brothers, Ltd., 770 Ala Moana Road, Honolulu 10, Hawaii.

IDAHO—Intermountain Equipment Co., Broadway at Myrtle St., Boise; 210 No. 4th St., Pocatello.

ILLINOIS—Gil Speer Equipment Co., 7825 South Kedzie Ave., Chicago 20.
Euclid Sales & Service, Inc., St. Louis 10, Mo.

INDIANA—Reid-Holcomb Co., 1510 Kentucky Ave., Indianapolis 21. Gil Speer Equipment Co., Chicago 20.

IOWA—Herman W. Brown Co., Des Moines. Cudahy Rapids and Sioux City.
Fehrs Tractor & Equipment Co., Omaha 2, Neb.

KANSAS—The G. W. Van Keppel Co., Kansas City 2.

KENTUCKY—Euclid-Kentucky, Inc., 2900 Crittenden Drive, Louisville.

LOUISIANA—Euclid-Memphis Sales, Inc., Memphis 2.

MAINE—H. A. Burkitt, Inc., Route 1, R.F.D. 2, South Portland.

MARYLAND—Rish Equipment Co., Clarksburg, W. Va.
L. B. Smith, Inc., Camp Hill, Penna.

MASSACHUSETTS—Clark-Wilcox Co., 116 Western Ave., Boston 34.
The W. I. Clark Co., New Haven, Connecticut.

MICHIGAN—W. H. Anderson Co., Inc., 47 West Seven Mile Rd., Detroit 3.
The Euclid Road Machinery Co., Hibbing, Minn.

MINNESOTA—The Euclid Road Machinery Co., Highway 169 West, Hibbing.

MISSISSIPPI—Euclid-Memphis Sales, Inc., Memphis 2.

MISSOURI—Euclid Sales & Service, Inc., 3231 Manchester Ave., St. Louis 10.
The G. W. Van Keppel Co., 2401 Ponseny, Kansas City 8.

MONTANA—Hall-Perry Machinery Co., P. O. Box 1367, Butte.

NEBRASKA—Fehrs Tractor & Equipment Co., 1909-11 Cuming St., Omaha 2. Colorado Builders' Supply Co., Denver.

NEVADA—Sierra Machinery Co., Inc., P. O. Box 1330, Reno; Geo. H. Philpott Co., San Francisco; Monrovia, California.
Foulger Equipment Co., Salt Lake City 8, Utah.

NEW HAMPSHIRE—Clark-Wilcox Co., Boston 34, Mass.

NEW JERSEY—L. B. Smith, Inc., Camp Hill, Penna.
Hubbard & Floyd, Inc., New York 51, N. Y.

NEW MEXICO—Lively Equipment Co., 2801 No. Fourth St., Albuquerque.

NEW YORK—Hubbard & Floyd, Inc., 151st St. & Gerard Ave., New York 51.
T. E. Potts Equipment Co., 2260 Sheridan Dr., Buffalo.
L. B. Smith, Inc., 357 W. Fayette St., Syracuse 2; 134 State St., Albany.

NORTH CAROLINA—North Carolina Equipment Co., P. O. Box 880, Greenville; P. O. Box 1206, Charlotte; Swanton Creek Rd., Asheville; P. O. Box 125, Guilford; P. O. Box 885, Wilmington.
Hampton Roads Tractor & Equipment Co., Norfolk, Virginia.

NORTH DAKOTA—Northwestern Equip. Co., Box 152, Fargo.
Northwestern Equip. Co. of Minot, Box 338, Minot.

OHIO—The W. W. Williams Co., 838 Goodale Blvd., Columbus 2; 4301 Brookpark Rd., Cleveland 11; 914 Main St., Cincinnati 15; 1360 Conant St., Toledo (Maumee).

OKLAHOMA—Butler-ks Equipment Company, Oklahoma City and Tulsa.

OREGON—Intermountain Equipment Co., Boise, Idaho.
P. L. Crooks & Co., 2145 N.W. Pettygrove St., Portland.

PENNSYLVANIA—Atlas Equipment Corp., 635 Ridge Ave., Pittsburgh 12.
Standard Equipment Co., 132 Horton St., Wilkes-Barre; Hepburn & Lycoming Sts., Williamsport.
L. B. Smith, Inc., Camp Hill (Harrisburg); 25th & Montgomery Avenue, Philadelphia.

RHODE ISLAND—Clark-Wilcox Co., 2323 Pawtucket St., E. Providence.

SOUTH CAROLINA—Southern Equipment Sales Co., Sumter Highway, Columbia.

SOUTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.

TENNESSEE—Euclid-Memphis Sales, Inc., 185 E. Butler Ave., Memphis 2.
Power Equipment Co., 1218 Island Home Ave., Knoxville; 600 W. Manning St., Chattanooga; 122 Clay St., Kingsport.

TEXAS—The Euclid Road Machinery Co., 1607 Levee St., Dallas 2.
Lively Equipment Co., P. O. Box 1430, El Paso.

UTAH—Foulger Equipment Co., 1361 So. 2nd West, Salt Lake City 8.

VERMONT—Clark-Wilcox Co., Boston 34, Mass.

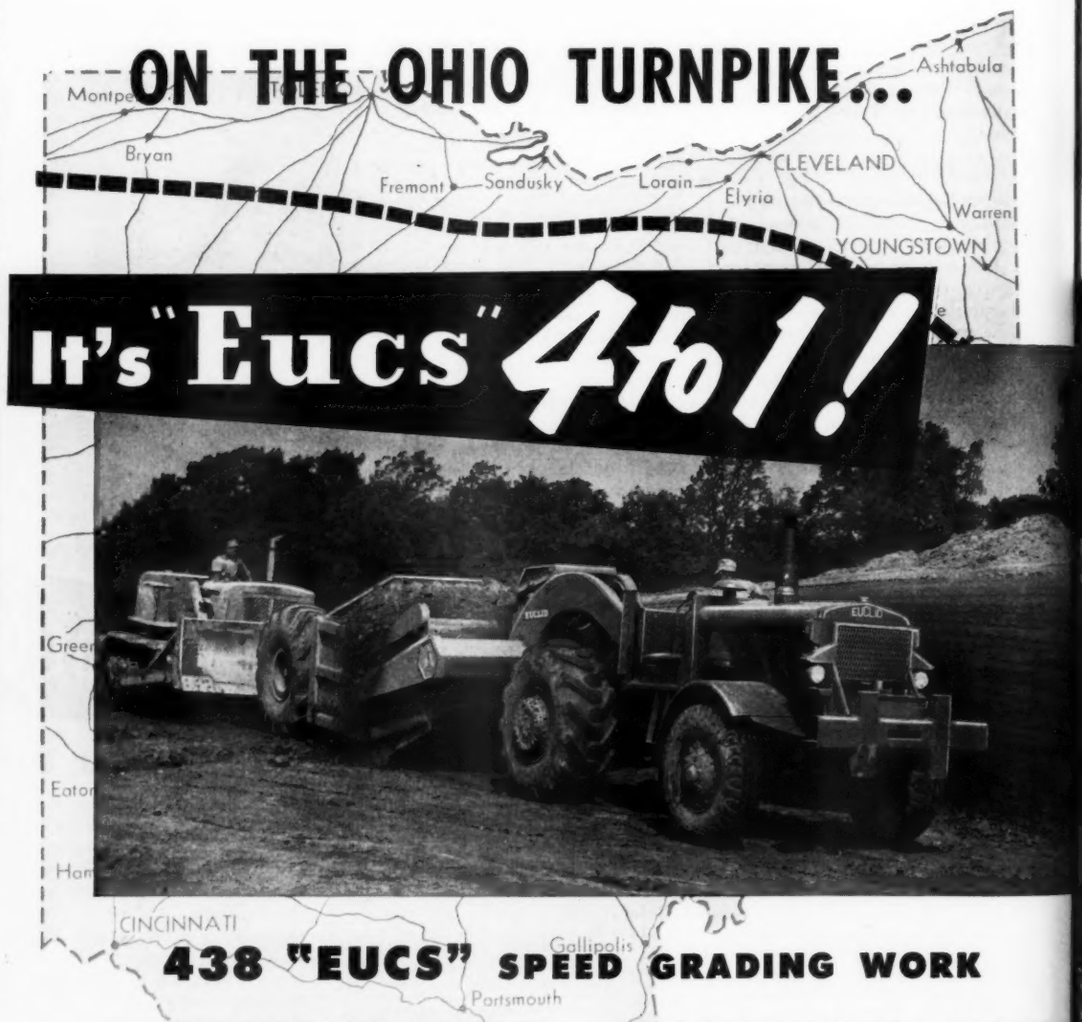
VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 20th and Kilton Ave., Norfolk.
Rish Equipment Co., 1401 Chamberlayne Ave., Richmond 10; 402 Center Ave. N.W., Roanoke 7.

WASHINGTON—Western Tractor & Equipment Co., 2230 First Ave. S., Seattle 4; 606 Prindle St., Chehalis; Rt. 12, Box 94, Yakima.
Intermountain Equipment Co., S. 615 Stevens Ave., Spokane 9.
P. L. Crooks & Co., Portland, Oregon.

WEST VIRGINIA—Atlas Equipment Corp., Pittsburgh.
Rish Equipment Co., Kanawha Blvd., Charleston 22; East on U.S. 60, Clarksburg; P.O. Box 389, Bluefield.
L. B. Smith, Inc., Philadelphia, Penna.

WISCONSIN—Cunningham-Ortmeyer Company, Milwaukee 46, Eau Claire and Green Bay.
Foulger Equipment Co., Salt Lake City 8, Utah.

WYOMING—Colorado Builders Supply Co., Casper.



438 "EUCS" SPEED GRADING WORK

From the Pennsylvania border to the Indiana line, 261 miles to the west, Euclid equipment is maintaining a fast pace on the 326 million dollar Ohio Turnpike. "Euc" Scrapers, Bottom-Dumps, Loaders and Rear-Dumps were first choice all the way—they outnumber all competitive rubber-tired earth moving equipment by better than 4 to 1!

There's good reason for this overwhelming preference by all of these leading contractors. They know from experience that they can depend on "Eucs" to get more work done on schedule—with little or no down time for repairs. Mighty important, too, is the ability of "Eucs" to take the toughest jobs in stride and move more payloads.

If you can't visit this big Ohio "Road Show" to see the wide range of work being done by "Eucs," have your nearby Euclid distributor give you helpful facts and figures on the complete line of Euclid equipment.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

tinue to expand along with the country's heavy construction industry. THE END

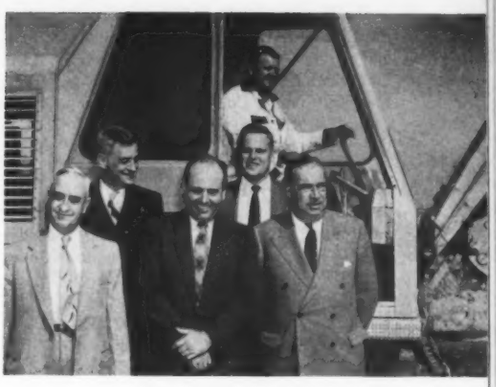
Neo-Flasher Rental Agencies

Rentals on Neo-Flasher barricade service are being handled by seven new distributors appointed by Light Products, Inc., Beverly Hills, Calif. The dealers will serve their immediate trade areas.

The agencies include Bowles & Eden Supply Co., 603 Second Ave., Dallas, Texas; The Epperson Co., 130 S. Franklin St., Tampa, Fla.; Graze-Dempsey, Inc., 2385 Corbett St., Jacksonville, Fla.; Reid-Holcomb Co., Inc., 1815 Kentucky Ave., Indianapolis, Ind.; and Tri-Con Distributors, Inc., 3660 Shaw Ave., Cincinnati, Ohio. The remaining two distributors are located in New York State. They are The B-G Equipment Co., 1180 Scotsville Road, Rochester, and The P-D Service Co., Pavilion, N. Y.

Warco Dealer Is Named in Texas

Serving the San Antonio, Texas, area as a new distributor of Warco motor graders is Askew Equipment Co. The graders are manufactured by W. A. Riddell Corp., Bucyrus, Ohio.



Pictured with Nile H. Bartell of the Construction Machinery Division of Clark Equipment Co., at Benton Harbor, Mich., during a demonstration of Michigan shovels: R. G. Cox and William G. Mayburry, both of Industrial & Farm Equipment Corp., Chester, Pa.; Mr. Bartell; Scott Smith, also of Industrial & Farm Equipment, and R. E. Kissinger of Furnival Machinery Co., Harrisburg, Pa. In the cab is Gale Stokes, field service representative for the Clark division.

New Dealers for Clark

Of the 13 new dealers selling and servicing the Michigan line of equipment made by the construction machinery division of Clark Equipment Co., Buchanan, Mich., eight will handle both excavator cranes and tractor shovels. They are Tyler Equipment Corp., East Longmeadow, Mass.; Eddy Equipment Co., Buffalo, N. Y.; Highway Equipment Co., Inc., Pittsburgh, Pa.; Cox Bros., Hoopeston, Ill.; Phillips Machinery Co., Richmond, Va.; and Anderson Equipment Co., Houston, Texas, in the United States; and Innes Equipment Ltd., Toronto, Ont., and Innes Equipment Quebec Ltd., Montreal, Que., Canada.

Five of the dealers will handle only Michigan tractor shovels. They are Clark-Wilcox Co., Boston, Mass.; W. K. Vickery, Buffalo, N. Y.; Minnesota Constructors Equipment Co., Inc., Minneapolis, Minn.; Myers Equipment Co., Duluth, Minn., and Sam H. Denny Road Machinery Co., Wichita, Kans.

Missouri Dealer Names Officer

John H. Heintz has been appointed vice president and general sales manager of the Missouri Construction Machinery Co., St. Louis, Mo. The sales, service, and parts facilities of the company are located at 8861 Ladue Road. The company, which represents Cook Bros. Equipment Co., Bay City Shovels, Inc., White Mfg. Co., and Concrete Sawing Equipment, is expanding its sales and service activities and acquiring additional lines of construction equipment.

Cleaver-Brooks Adds Dealers

Handling self-contained boiler equipment for Cleaver-Brooks Co., Milwaukee, Wis., are two new dealers, Charles R. Carey, Knoxville, Tenn., and Lefler Wyomont Supply Co., Billings, Mont.

The Carey organization is located at 247 Conner Ave., Knoxville, and has exclusive sales and service rights for northeastern Tennessee and the western counties of Virginia. Covering Montana, northern Wyoming, and Lemhi County in Idaho is the Lefler company, which maintains headquarters in the Stapleton Building, Billings.

New Distributors for Dart Co.

A total of 18 domestic and export dealers are handling the heavy-duty off-highway trucks made by Dart Truck Co., Kansas City, Mo. The

78 "EUC" SCRAPERS are a Feature of this Road Show

Euclid scrapers—78 of them—are maintaining a fast pace for 14 of the contractors on the Ohio Turnpike. Big Twin-Power "Eucs" of 18 cu. yd. struck capacity and 15.5 cu. yd. scrapers are making dirt fly all along the way. Fast travel speed, ability to get heaped loads in practically any material, and unsurpassed job availability make Euclid scrapers the logical choice of rubber-tired earth moving equipment for these grading contracts.

Simple, rugged design and easy accessibil[illegible]y for servicing keeps down time to a minimum. Because "Eucs" stay on the job week after week . . . they are helping to keep the grading on schedule in spite of the wettest spring in years.

Fleets of Euclid Bottom-Dumps, working under shovels, draglines and "Euc" Loaders are paying off in high production and low cost yardage, too. As of early May there are 20 Loaders and 306 Bottom-Dumps currently at work on the project . . . 34 Rear-Dumps complete the Euclid Equipment . . . and there'll be more as the big job rolls into high gear!

Whether you're working on roads, airports, dams or other heavy earth moving, you can depend on "Eucs" to move more yards profitably. Get in touch with your Euclid distributor for information on the complete line of Euclid earth moving equipment—he's a good man to know!

"EUCS" move more yards per day

C. H. Grant Co., Oakland, and the Smith-Booth Usher Co., Los Angeles, are new California dealers. Two Ohio dealers are Cleveland Contractors Equipment Co., Cleveland, and Carroll & Edwards Equipment Co., Cincinnati.

Other dealers located throughout the country are Funkhouser Equipment, Kansas City, Mo.; Tractor & Equipment Co., Oak Lawn, Ill.; West Virginia Tractor & Equipment Co., Charleston; Service Supply Corp., Philadelphia, Pa.; Clifden Rocktool Co., Rockaway, N. J.; R. W. Thompson Co., Hartford, Conn.; Balzer Machinery Co., Portland, Oreg.; Martin-Lumby Co., Dallas, Texas; Bowlake Equipment Co., Seattle, Wash.; and McCarthy, Jones & Woodard, Nashville, Tenn. Vancouver Machinery Co., Vancouver, B. C., is serving the Canadian market.

Export dealers for Dart are B. K. Khanna Co., New Delhi, India; Universal Mechanization Co., Ltd., Johannesburg, South Africa; and U. S. Automotive Co., Inc., Manila, Philippine Islands.

Three Dealers for Prime Mover

The Prime-Mover Co., Muscatine, Iowa, manufacturer of a ¾-ton-capacity powered wheelbarrow, has made three distributor appointments. In Illinois, the company is represented by C. C. Hubbard Machinery Co., 896 E. Eldorado St., Decatur.

Pecaut Industrial Supply Co., 1819 E. Fourth St., Sioux City, Iowa, and Pecaut Equipment Co., 900 E. Eighth St., Sioux Falls, S. Dak., are dealers for Prime-Mover equipment in their respective territories.

Visiting one of the asphalt plant installations of Standard Steel Corp., Los Angeles, Calif., are some of the company's dealers. A tour of Standard plants in southern California was on the agenda of the 3-day dealer meeting in Palm Springs, Calif.

A-C Names Two Dealers

Motors, controls, and transformers made by Allis-Chalmers Mfg. Co., Milwaukee, Wis., are now being distributed in Yuma County, Ariz., by The Mohawk Wholesale & Equipment Co., 301 First St., Yuma. The dealer organization is headed by J. A. Weber, and C. W. Bedwell is treasurer.

The Alabama Electric Co., 215 E. Troy St., Dothan, Ala., has been appointed a certified service shop for A-C motors, controls, and transformers in Barbour, Henry, Dale, Coffee, Houston, Geneva, Covington, and Escambia counties.

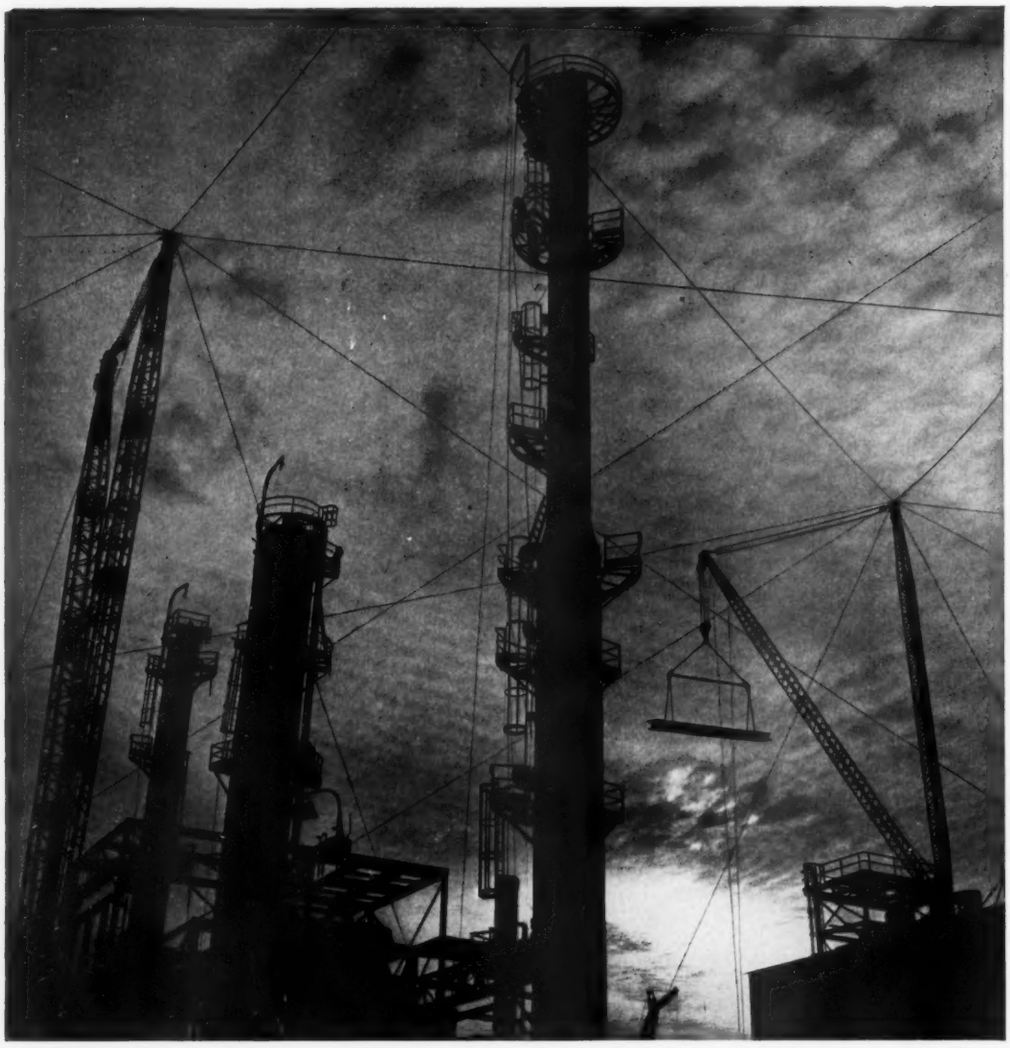
Philpott Co. Is Pioneer Dealer

George M. Philpott Co., San Francisco, Calif., is a new west coast dealer for Pioneer Engineering Works, Inc., Minneapolis, Minn. The dealer organization, serving northwestern and west-central sections of California, will handle the complete line of Pioneer Continuflo equipment, including crushers, screens, feeders, conveyors, gravel plants, rock plants, washing plants, and asphalt plants.

Anderson Co. Makes Promotion

The W. H. Anderson Co., Inc., 47 W. Seven Mile Road, Detroit, Mich., now serving as dealers of Lorain, Euclid, Worthington, and Cleveland Trencher heavy-construction equipment, has named Richard E. Seed sales manager. With Anderson for more than six years as field sales representative and assistant sales manager, Mr. Seed takes the place of S. M. Hunter, who has resigned.

Richard E. Seed, new sales manager of the W. H. Anderson Co., Inc., Detroit.



Wire Rope at Work—This is part of a multimillion-dollar construction job at Norco, Louisiana, not far from New Orleans. When completed for Shell Oil Company, it will be one of the world's most modern refineries.

Wire rope is one of the hardest-working components of the big steel-erection derricks. Because of the tonnages involved, the units are rigged with large-diameter rope, and there is almost three miles of 1⅜-in. Bethlehem Purple Strand on the job. In addition, several thousand feet of 2-in. Purple Strand is employed as guy lines. Here, as in every type of industry where heavy loads are lifted or hauled, the Bethlehem rope is more than equal to the tasks imposed upon it.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

C. A. Patton, manager of F. W. Gartner Co.'s rental department.

New Gartner Co. Executive

C. A. Patton, who has been in the machinery and construction field for the last 25 years, has joined the F. W. Gartner Co., 3805 Lamar Ave., Houston, Texas, as manager of the contractors rental equipment department. Mr. Patton worked for the Gartner organization a number of years ago.

Florida Dealer for Power Units

Marlow pumps, Briggs & Stratton engines, and GM diesel engines are among the industrial power units and marine engines handled by Bill Free Co., 3312 Orange Ave., Fort Pierce, Fla., in the surrounding territory. The dealer offers sales and service on this equipment, as well as on such pumps as Gardner-Denver, Fairbanks, Morse, and Berkley. Waukesha, Le Roi, Continental, and Chrysler power units are also handled by the company on a sales and service basis.

Hensley Appoints Two Dealers

Two companies have been appointed distributors for the line of heavy construction equipment manufactured by Hensley Equipment Co., Oakland, Calif. Hudson Equipment Co., San Diego, Calif., and Pioneer Equipment Co., Reno, Nev., both named by Hensley, will handle the manufacturing firm's dozer rippers, brush rakes, dozer end bits, cutting edges, and tractor attachments.

Mississippi Dealer for Gar Wood

Handling ten models of Buckeye ditchers and two models of Buckeye Finegraders for the Findlay Division of Gar Wood Industries, Inc., Wayne, Mich., is Equipment, Inc., Jackson, Miss. Equipment, Inc., will serve 36 counties in central Mississippi and 14 counties in southern Mississippi on a nonexclusive basis.

Hough Dealer in Mississippi

The Mississippi Road Supply Co., Jackson, Miss., has been appointed as a distributor for the line of Payloader tractor-shovels and tractors manufactured by the Frank G. Hough Co., Libertyville, Ill.

Moore Equipment Moves

H. W. Moore Equipment Co. has moved to a new address where it will offer expanded sales and service to contractors in Colorado. The new location of the company is at 5990 Colorado Blvd., Denver 1, Colo.

Heil Adds Michigan Distributor

Roadway Mounting & Equipment Co., 21177 Mound Road, Van Dyke, Mich., is a new distributor of truck bodies and hoists manufactured by the body and hoist division of The Heil Co., Milwaukee, Wis. The company is offering sales and service on single and double-cylinder hydraulic hoists, dump bodies, and Heiloader elevating truck tailgates in six Michigan counties.

Hardy Represents Baker

Representing the Baker Mfg. Co., Springfield, Ill., is James H. Hardy. Mr. Hardy is southeastern regional representative for the company, and his territory includes North and South Carolina, Georgia, Alabama, Florida, Virginia, and West Virginia, together with Nashville and Knoxville in Tennessee.

Dealers—this is your department so send us your news and photos—new plants, new appointments, new products.

Power-Steer Booster

■ A power-steer booster suitable for heavy construction vehicles is announced by the Air-O-Matic Power Steer Corp., 24 Noble Court, N. W. Cleveland 13, Ohio. The Air-O-Matic power-steer booster features a new dual air-valve system and a redesigned air-piston assembly within the booster.

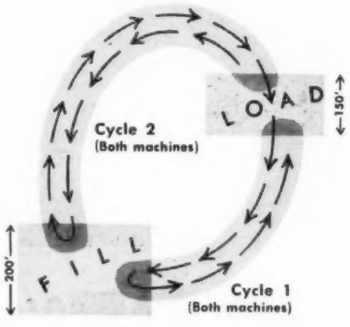
The dual valving consists of an external valve that regulates the pressure of air entering the booster and internal valves that control air entering the booster cylinder, so that the air-piston assembly moves back and forth with positive action.

In the piston assembly, a new air-control cylinder replaces the spring operation to actuate the friction band within the booster cylinder. The manufacturer stresses that the result of this positive-action design has been to eliminate steering wheel fight.

For further information write to the company, or use the Request Card at page 18. Circle No. 80.

Grading for aircraft plant in Mojave Desert

RUBBER TIRES PAY OFF 2 WAYS



Loading in 150' cut was planned so pusher had minimum of travel. First, it loaded both Tournapulls in one direction, taking 75' per machine. On next cycle, it turned and loaded both in opposite direction. To keep borrow level, loads were taken progressively across face of cut. Tournapulls minimized their cycles by turning 180° after dumping and returning along same route as haul.

"D" spreads 8-yd. load in 20 seconds over 85'. Note compaction of "D's" big, low pressure tires which showed 97% on California test.

Profitable use of rubber-tired D Tournapulls for compaction as well as for dirtmoving is reported by Jasper Haley, Baldwin Park, Calif.

Leveling Northrop Jet plane plant site at Palmdale Air Base, 2 of his 3 electric-control 7-yd. "D's" moved 45,000 yards of dirt in 22 days. They compacted as they spread . . . then drove back and forth over the fill as necessary to finish compaction to specified density of 95%. At time pictures were taken, lowest compaction by California Test System was 97%.

In typical dirtmoving, sideboarded Tournapulls were push-loaded with 8 pay yds. of clayey sand in 45 seconds. In spite of rolling resistance of 200 lbs. on haul road, "D's" averaged a 1200' round trip every 3½ minutes. Each unit delivered 14 loads per 50-minute hour, for a combined output of 224 pay yds.

95% efficiency in 10 months

Rubber-tired 28 mph mobility speeds job-to-job moves, too. The Tournapulls drive everywhere under their own power, often through congested Los Angeles traffic, to maintain a busy work schedule. After 10 months worktime, Haley's 3 "D's" show 95% mechanical efficiency.

Says Partner Buford Richardson, "When it comes to housing tract work, which is our specialty, Tournapulls can't be beat. They're very maneuverable and work in places where most other units cannot work."

Foreman Jim Wright reports, "All our operators definitely prefer LeTourneau-Westinghouse Tournapulls over other scrapers, and I agree.

"The fact they can travel from job to job under their own power is an added point in their favor."

Check the facts!

D Tournapull's speed, mobility, and maneuverability can help you, too. Why not check user-verified facts and figures on work like yours. Ask us for a demonstration on your job. You name the time and place . . . and we'll be there!

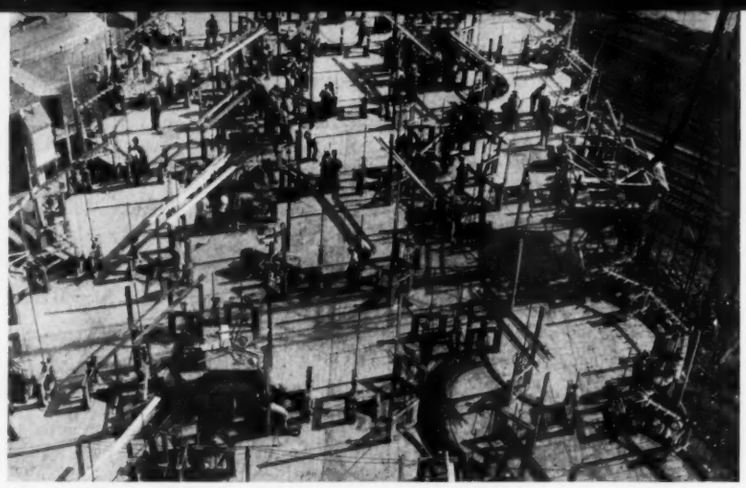
Tournapull—Trademark Reg. U.S. Pat. Off. DP-511-8-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

CONSTRUCTION CAMERA



Higher and Higher—Grain bins for the 2,500,000-bushel Elam Grain Co. elevator in St. Louis, Mo., rise to their final 154-foot height on slip forms which ride 224 jacks. Plywood forms, 42 inches high and of ⅝-inch thickness, rose to full height on the 279-foot headhouse and the bins without a fallout. The high headhouse required addition of a stabilizing floor at mid-point in erection. One of the ten tallest elevators in the country, the $3 million project contains 23,000 cubic yards of concrete and 960 tons of reinforcing steel, supplied by Laclede Steel Co. Above, work continues on both structures on either side of the warehouse.

Fuel costs reduced ALMOST 95%

Here's real economy! This 35-ton Plymouth with Torqomotive Drive operates for more than 18 weeks on the amount of fuel its predecessor of similar size used in 1 week! Coupled with this reduction in fuel use were tremendous savings in maintenance and repairs, especially clutches. Pittsburgh Ferrous Products Company (Mifflin Works), Glassport, Pennsylvania, uses this modern Plymouth to haul up to 8 cars loaded with scrap metal over 2% grades and around tight curves. It pulls switches and spots with sure, time-saving smoothness. These are some of the many advantages awaiting you in the great Plymouth line. Why not get the whole story? Write for descriptive catalog. Models from 3 to 70 ton, Gasoline, Diesel, Diesel-Electric, with mechanical or Torqomotive Drive.

THE FATE-ROOT-HEATH COMPANY • Dept. A-12, Plymouth, Ohio

PLYMOUTH®
TORQOMOTIVES

ALSO MANUFACTURERS OF F-R-H CERAMIC MACHINERY

Seven Engineering Wonders Listed by ASCE Section

The Fairless Works of the United States Steel Co. at Morrisville, Pa., has been selected to head a list of the seven engineering wonders of the Delaware Valley by the Philadelphia section of the American Society of Civil Engineers.

Like the other sections of the society, the Philadelphia section of the ASCE will submit its list to the national organization, which will select the top seven engineering wonders in the country. The Philadelphia section includes the Philadelphia metropolitan area, New Jersey, and Delaware.

The other engineering works in the Delaware Valley, in the order of their selection, were the Delaware Memorial Bridge, the Pennsylvania and New Jersey turnpike systems, the New York City Delaware water supply project, the Philadelphia Electric Co. power plant (including the Delaware plant), the Schuylkill River dredging project, and the oil refinery industry along the Delaware River estuary.

Construction Men's Assn. Moves to New Quarters

The Construction Men's Association, an organization of construction specialists and technicians who work on overseas projects for American contractors, has moved into its new headquarters at 271 Church St., New York, N. Y.

The new quarters, five times larger than those occupied by the association since its founding in 1944, include a large room where out-of-town contractors may interview personnel for overseas projects or other business.

Invest In

U.S. DEFENSE BONDS

Now Even Better

Dry Inside—An earth-dike cofferdam, half in a lake and half in a bay, is kept dry by two Griffin pumps and a Griffin wellpoint system. The 9-foot-high embankment encloses a 175 x 80 foot-area where a concrete culvert is being constructed at Plandome, N. Y. Hendrickson Bros., Inc., Valley Stream, N. Y., is the contractor.

Airport Airlift—Into the maw of an Air Force C-124 Globemaster moves a refueling truck, a Caterpillar D6, and a Cat No. 12 motor grader used to build "Snow Port", the only snow-compacted runway in Alaska. Equipment was flown to Ariak and moved cross-country to the site to build the 10,000-foot-long and 200-foot-wide test strip.

Preload Co. Inaugurates Domestic Licensing Plan

The growing popularity of prestressing as a principle of design and construction has caused the Preload Co., Inc., New York, N. Y., to enter into a domestic licensing program with selected companies throughout the United States. The licenses will cover Preload's methods of construction in all fields of prestressed concrete, including tanks, pressure pipe, precast structural members, cast-in-place and continuous structures, and pavements.

Under the new arrangement, a licensee may select one or several categories in which to operate; it is not necessary for him to assume all categories.

Preload, organized in the mid-thirties, now owns or controls more than 50 patents and patent applications for specialized construction.

James K. Pickard Becomes Atomic Energy Consultant

Following his resignation from the U. S. Atomic Energy Commission, James K. Pickard has opened a consulting practice in atomic energy developments at 1518 K St. N. W., Washington 5, D. C. Mr. Pickard will be concerned with the impact of atomic energy developments on different types of business and opportunities for business created by atomic energy.

Mr. Pickard has worked in a number of atomic energy activities since 1944 with the Manhattan Engineer District, the Atomic Energy Commission, and contractors of both government agencies. A graduate of the Massachusetts Institute of Technology, he was at one time associated with the General Electric Co.

Rolatape
CALIBRATED
Measuring
WHEELS

Measures and records total as it rolls. One man with Rolatape DISTOMETER can measure horizontal, vertical, overhead, curved surfaces—line to line and wall to wall—easily and accurately.

Write for full details
ROLATAPE, INC.
1741 14th Street
P. O. Box 1190
Santa Monica, Calif.

Fuller 10-B-1120 Transmissions give Allegheny Construction Equipment Company of Pittsburgh, Pennsylvania, the faster, easier shifts they need in their fleet of Autocar dump trucks, which haul 30-ton payloads on grades up to 15%.

Leading Truck Manufacturers Standardize on Fuller Transmissions

. . . for Fuller Transmissions have *proven* themselves in all types of on-and-off highway service, where load-and-road conditions are the toughest. Outstanding performance and *customer satisfaction* has created such a demand that leading truck manufacturers have *standardized* on Fuller Transmissions.

Famous "extras" that mean longer wear life, quiet operation, easy shifting are: . . . crowned gear teeth that reduce load concentration . . . offset mating gears to limit load concentration.

More than 110 different models are available, for trucks from 100 to 400 hp, engines from 330 to 1440 cubic inches . . . there is a Fuller Transmission *designed* with your job in mind . . . ready to help you move more, *for less.* Check with your local truck dealer for the *right Fuller* Transmission for your job.

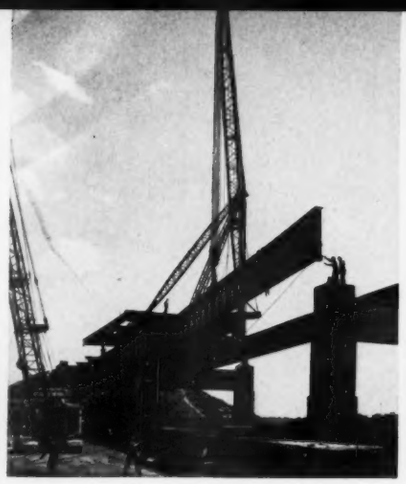
where horsepower really goes to work

Fuller TRANSMISSIONS

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wisc. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Western Dist. Branch (Sales & Service, All Products), 641 E. 10th St., Oakland 6, Cal.

CONSTRUCTION CAMERA



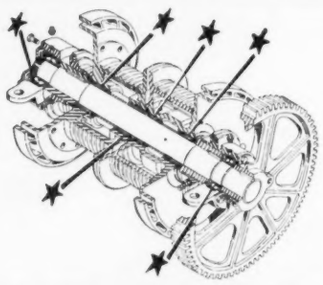
Placing Steel—Girders are set in place on the $12,000,000 high-level bridge along Buffalo's industrial lakefront by a derrick traveler. Bethlehem Steel Co. is erection contractor.

Dike Building—Gravel for a protective dike around Southern California Power Co.'s new Carlsbad generating plant is dozed to shore by an International TD-14A crawler tractor. Dikes prevent tidewater from flooding the inlet to the plant site.

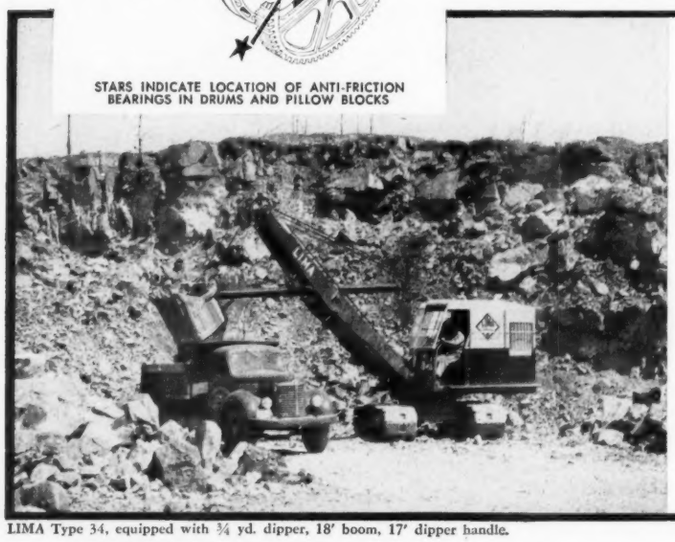
Emergency Repair—Before high water stage is reached on the Columbia River, this Esco 2-yard orange-peel bucket places riprap along the dike to prevent erosion.

LIMA'S

shafts and drums roll on anti-friction bearings



STARS INDICATE LOCATION OF ANTI-FRICTION BEARINGS IN DRUMS AND PILLOW BLOCKS



As a result of twenty-five years' experience with anti-friction bearings, Lima design engineers know exactly where to put them to give you maximum benefits. This cut away view shows how Lima utilizes anti-friction bearings in the drums. X-ray vision would show you how Lima uses them throughout the main machinery on all shafts and other important parts.

This modern means of eliminating destructive friction benefits LIMA owners through faster operating speeds and lower upkeep. Anti-friction bearings also maintain perfect shaft alignment and insures smoother, easier clutch action.

LIMA Type 34, equipped with ¾ yd. dipper, 18' boom, 17' dipper handle.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath for dirt elimination and smoother, quieter operation.
7. Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA
SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Construction Equipment Division

HRB Booklets on Highway Laws, Traffic Congestion

The modernization of state highway laws and some aspects of urban traffic congestion are subjects treated in two new booklets issued by the Highway Research Board.

"Better Laws for Better Highways" is the first of a series of monographs dealing with the need for modernizing state laws to keep abreast with technical advances and modern concepts of highway engineering and management. Highway classification and constitutional provisions are discussed by David R. Levin, secretary of the Highway Laws Committee of the HRB.

The booklet traces the history of the committee's research efforts and outlines plans for attaining adequate laws to develop and maintain highways in every state, county, and city.

"Urban Traffic Congestion" contains two papers presented at the 1954 meeting of the HRB in Washington. One reports the findings from a review of available data and literature on the subject, while the other discusses a need for an objective method of measurement and evaluation of traffic congestion. Characteristics and some fundamental principles of congestion are discussed.

Bulletin 88, "Better Laws for Better Highways", is priced at 45 cents, and Bulletin 86, "Urban Traffic Congestion", at 60 cents. Both may be ordered from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

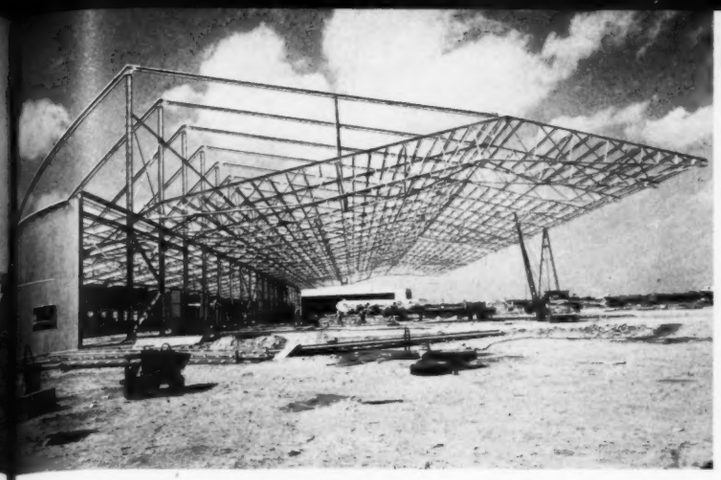
WASHO Test Road Data

After 238,000 heavy axle loads were applied to the WASHO Test Road in southeastern Idaho, test traffic was halted while data was compiled on each of the test pavements.

The latest test involved eight trucks which carried test loads a total of 630,000 miles on the sections.

Test pavements, varying from 6 to 22 inches in thickness, are of gravel with asphaltic-concrete surfacing.

The Highway Research Board, conducting the tests for the Western Association of State Highway Officials, will publish a final report analyzing the data next spring.



Innovation—With a cantilever-type roof, this 435 x 161-foot hangar at Greenville, Texas, offers more unobstructed working space since overhead supports are anchored to two rows of vertical columns at the rear. The hangar was designed and built by Irwin Newman Construction Co., Houston, Texas, for Temco Aircraft Corp., Dallas, Texas.

Fighting the Clock—Delayed by two weeks of rain at the start of the job, Yonkers Contracting Co., Yonkers, N. Y., pushes work on the removal of 3,000,000 yards of dirt and 100,000 yards of rock on the Portland-to-Augusta stretch of the Maine Turnpike with these Allis-Chalmers HD-20 tractors with Car Wood dozers.

L-W Mobile Training Unit Is Sent to Cuba

A mobile service training unit outfitted by LeTourneau-Westinghouse Co., Peoria, Ill., to bring exhibits, demonstrations, and lectures on operation and maintenance procedures to users of L-W equipment, recently was shipped to Cuba where two 8-day training schools were held for equipment owners and users.

The unit, a truck powering a 33-foot van-type drop-frame trailer, paid visits to Havana and Camaguey. Already familiar to contractors and dealers throughout this country, the training unit made its first sea journey aboard a railroad-car ferry operated by the West India Fruit & Steamship Co.

The training sessions, held in a portable classroom which the truck carried, were devoted to major types of L-W earthmoving equipment, and to such detail as operation and maintenance of electrical systems. The use of attachments and general trouble-shooting were also among subjects treated. Cutaway drawings, exhibits, films, other visual aids, and lectures were used in the sessions.

Personnel from the LeTourneau-Westinghouse training division who comprised the instructor staff include Mile Ramsey, chief instructor, and Tommy Harrison and Antonio Martinez. L. E. Armstrong, director of service training for L-W, was present for some of the sessions.

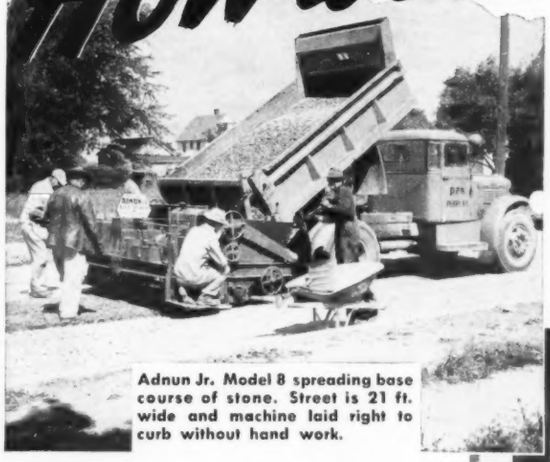
Many contractors and others working in connection with Cuba's extensive program of highway construction and improvement attended the schools.

Film on Drilling, Blasting

A 16-mm sound-color film on drilling and blasting operations in an underground limestone quarry has been released by Gardner-Denver Co., Quincy, Ill. Titled "$CaCO_3$" for calcium carbonate, the picture shows how 15-foot holes were drilled in the face of the Black White Limestone Co. quarry in Quincy by four Gardner-Denver rock drills operated by two men on a drilling rig. Loading and blasting of the holes, as well as the removal of the broken rock, are also shown.

Prints of the film can be obtained for group showings by writing the Gardner-Denver Co.

HOW to do a BETTER JOB of STREET PAVING



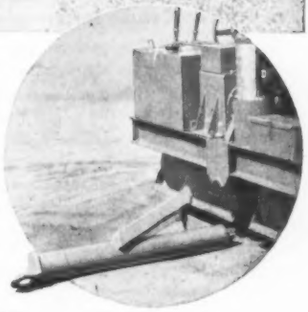
Adnun Jr. Model 8 spreading base course of stone. Street is 21 ft. wide and machine laid right to curb without hand work.

THE NEW ADNUN JR MODEL 8 BLACK TOP PAVER

HERE is a street job in New York State. The Adnun Jr. handled all of the spreading on this from stone base to finished top course. The Adnun Jr. is a highly engineered, quality, precision, tow-type paver that is far superior to the usual hopper on wheels now being used for non-specification work. The advantages of the Adnun Jr. assure greater accuracy in course thickness, improved density and better joints with a material reduction in hand work.

Its ability to maneuver without load saves time on relocations. The powered Breaker Bar in the Hopper assures better compaction. The Oscillating Toothed Cutter Bar, with overlapping action, cuts the course off at the right thickness without troweling fats to the surface and makes a tighter joint without hand work. A smooth course surface which approaches that of larger pavers, results from the Adnun principle of Continuous Course Correction.

These are only a part of the long list of Adnun Jr. advantages in performance and design. You should know all about them. Let us send you a folder on it today.



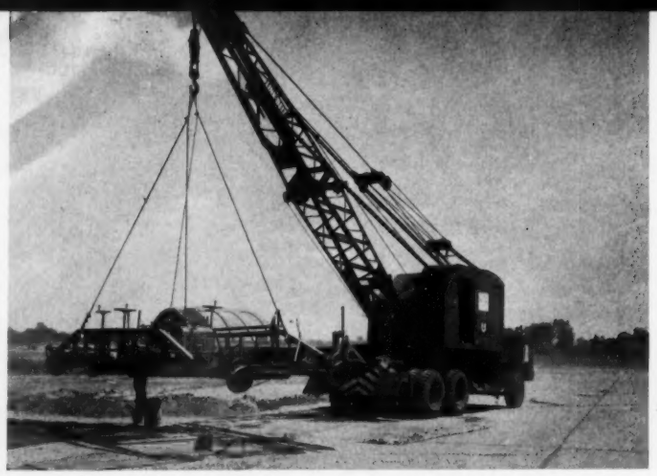
After stone course was shot with oil, Adnun Jr. laid the asphalt surface in two courses in 7 ft. sections. The machine is here laying the binder.

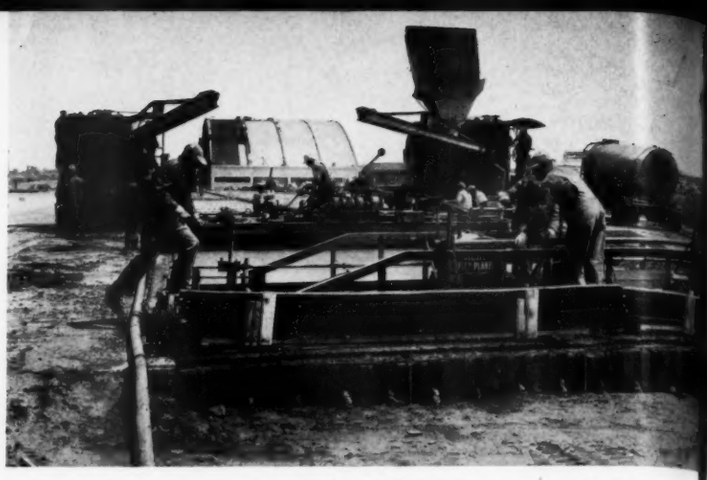
The Adnun Jr. is easily moved. A removable Trailer Hitch permits lifting the unit with the truck body hoist and towing it anywhere with the paver rolling on its own front wheels.

ADNUN JR MODEL 8 BLACK TOP PAVER

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1914 State Street, NUNDA, NEW YORK
BLAW-KNOX

CONSTRUCTION CAMERA





Shifting Equipment—As paving work is finished at the end of an apron strip at Lambert Municipal Airport, St. Louis, Mo., a Flex-Plane jointing machine is picked off the forms by this Link-Belt Speeder Model HD-9 truck crane and carried to the next lane. Swinging the machine around, the crane sets equipment back on the forms at the start of a new lane. Above, two Koehring 34E dual-drum pavers and the Blaw-Knox finishing machine and vibrator work ahead of the jointing machine which has just been set on the line. Paving work on the municipal field is being done by Fred Weber, Contractor, Inc., St. Louis.

Up-To-Date Directory Of Highway Personnel

Information on toll roads throughout the country and on the administrative setup of the American Road Builders' Association is contained in the 1954 directory, "Highway Officials and Engineers", published by the ARBA.

As usual, the directory lists more than 1,500 names, titles, and addresses of administrative engineers and officials in the 48 state highway departments and the District of Columbia. Headquarters and division personnel of the Bureau of Public Roads also are included in an up-to-date listing.

Other sections of the directory are devoted to engineers and administrative personnel of toll-road authorities, and to a tabulation of states having legislative authority to construct toll roads. Officers and directors of the ARBA, its seven organized divisions, and its Washington staff also are listed.

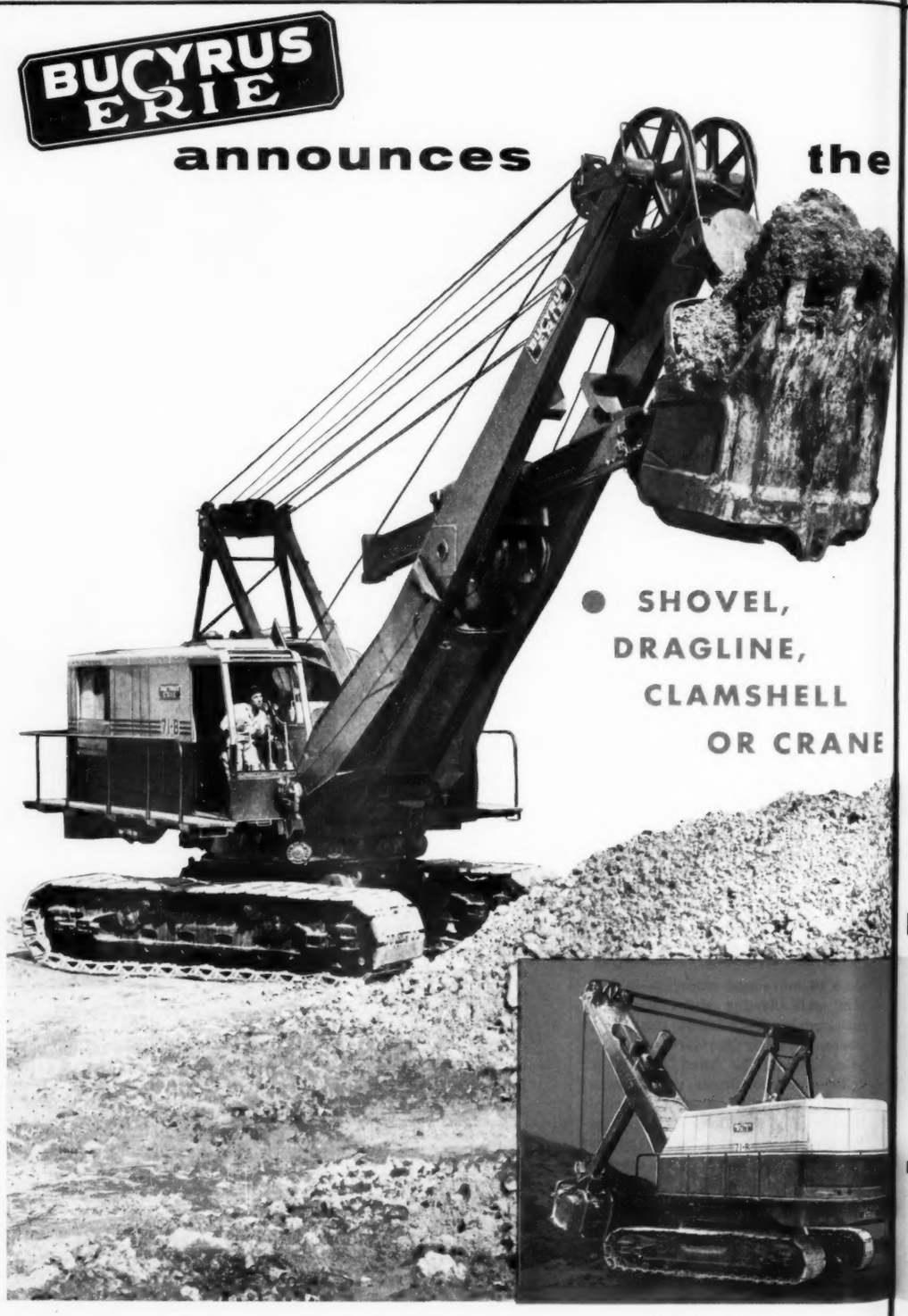
As before, there is a tabulation by states showing highway funds expended during 1953 and estimating expenditures for highway construction and maintenance during 1954.

"Highway Officials and Engineers" is priced at $1 and may be ordered from the American Road Builders' Association, World Center Bldg., Washington 6, D. C.

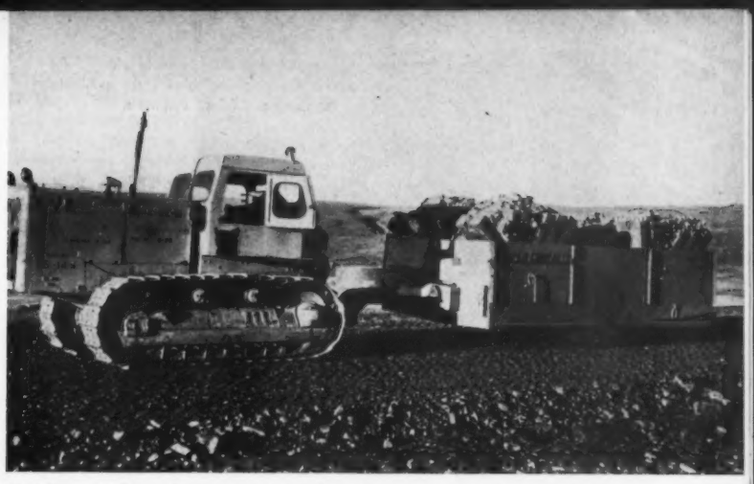
Wellman Buys Browning Locomotive Crane Business

The Wellman Engineering Co., Cleveland, Ohio, has acquired the locomotive crane division and plant facilities of The Browning Crane & Shovel Co., Cleveland, Ohio, as part of an expansion program in the material-handling equipment line.

Wellman, manufacturer of clamshell and dragline buckets, unloading towers, car dumpers, and heavy-duty material-handling equipment, will take possession of the plant near the end of this month for the manufacture of locomotive cranes. The new organization will be known as the Wellman-Browning Locomotive Crane Division of The Wellman Engineering Co., and will have headquarters at 7000 Central Ave., Cleveland. Browning truck and wagon cranes will be manufactured by The Browning Crane & Shovel Co. as before.



Big Rig—Dwarfing a 25-ton bottom-dump Euclid, this Marion 151-M electric dragline with 8½-yard bucket and 90-foot boom chews in some of the 5,000,000 yards of material being excavated on a stretch of the 341-mile Ohio Turnpike by Western Contracting Corp., Sioux City, Iowa.



Vital Base—A Super-Compactor rubber-tire roller, pulled by a Caterpillar D8 tractor, compacts subbase for apron construction at the U. S. Air Force Base at Thule, 700 miles north of the Arctic Circle. The work was rushed to completion in the 24-hour daylight summer months.

new 3-yard 71-B

To meet the demand for a convertible 3-yd. excavator of high-speed, high-output performance, Bucyrus-Erie has developed the new 71-B. Designed from the ground up as a completely new machine, it has outstanding features that have been field-proved on other Bucyrus-Eries through thousands of machine-years of service.

- POSITIVE TWIN-ROPE CROWD
- RECTANGULAR INSIDE DIPPER HANDLE
- STRONG LIGHT BOOM
- FULLY INDEPENDENT BOOM HOIST
- CHOICE OF FOUR A-FRAMES
- ALL-PURPOSE HEAVY DUTY DIPPER
- FULL AIR CONTROL (not just air assist) except for drum brakes and swing and propel clutches.
- TORQUE CONVERTER DRIVE (also available without torque converter)
- ONE-PIECE CAST STEEL REVOLVING FRAME
- 12 CONICAL HOOK ROLLERS
- DOUBLE FLANGE ROLLER PATH
- ROTATABLE SWING RACK GEAR
- FOUR OPTIONAL CRAWLER MOUNTINGS
- FRICTION STEERING CLUTCHES AND DIGGING BRAKES spring set and air released.

These and other features give the new 71-B a balanced and rapid work cycle for continuous high output, along with the durability for sustained operation and long life. For more information on this outstanding new excavator see your nearby distributor.

65E54C

BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE WISCONSIN

BUCYRUS ERIE

⅜- to 4-cu. yd. gasoline, diesel, and single-motor electric . . .

INDIVIDUAL DESIGN . . . for each model in the line

Shovels, Draglines, Cranes, Clamshells, Dragshovels.

New PCA Appointments

The transfer of a district engineer and appointment of two new district engineers have been announced by the Portland Cement Association, Chicago, Ill. The changes were made with the opening of district offices in Orlando, Fla., and New Orleans, La.

James E. Dunn, former manager of the Washington, D. C., office, is now in charge of the Orlando headquarters at 227 N. Main St. Cement users in Florida, formerly serviced from the Atlanta, Ga., office, will be served by the new office. Mr. Dunn holds membership in the American Society of Civil Engineers, Society of American Military Engineers, and the American Concrete Institute.

Replacing Mr. Dunn as district engineer in Washington, D. C., is D. L. Chaney, who was formerly regional structural engineer in the PCA Atlanta office. He is a member of the Georgia Engineering Society, American Society of Civil Engineers, and American Concrete Institute.

Andrew J. Spradlin is in charge of the New Orleans office in the International Building, 611 Gravier St. This office will serve Louisiana, an area formerly handled by the Birmingham, Ala., headquarters. Mr. Spradlin is a member of the National Society of Professional Engineers.

Marion Shovel Co. Takes Reins of Osgood-General

Controlling interest in Osgood-General, Marion, Ohio, manufacturer of a complete line of power cranes and excavators, has been acquired by Marion Power Shovel Co., also of Marion. The transaction followed authorization by the board of Marion Power Shovel for exchange of Marion common stock for the stock holdings of Robert C. Owens, president of Osgood-General.

Simultaneously with the exchange of stock, Marion Co. officials announced that the companies involved would retain their separate identities. Manufacturing and sales activities will be coordinated to whatever extent is practical.

Both the Marion Co., manufacturer of power shovels in a wide-capacity range as well as other excavating machinery, and Osgood-General maintain world-wide sales organizations.

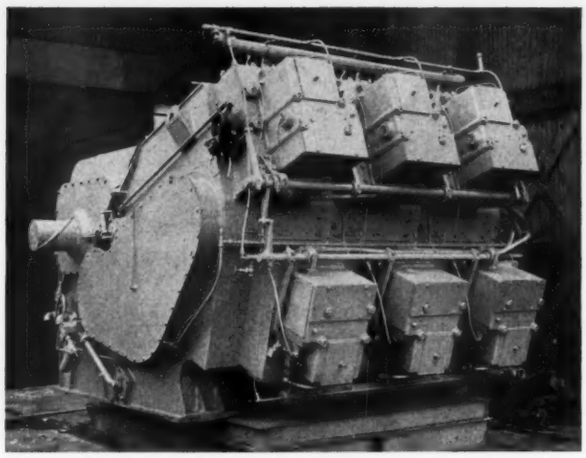
The Dalton D-500 portable electric jig saw. Five types of blades are available for cutting different materials.

New Electric Jig Saw Has Pistol-Grip Handle

■ A new portable electric jig saw with a pistol-grip handle is announced by the Dalton Mfg. Co., 20 S. Central Ave., St. Louis 5, Mo. The new Dalton D-500 saw does the work of a rip, cross-cut, jig, coping, scroll, band, and keyhole saw. It comes with five different blades for cutting plastics, metals, composition boards, hard rubber, and other materials.

Powered by a universal motor, the saw can be used on 115 volt ac or dc current. It has a built-in compressor to blow sawdust off the guide line and a system for quickly changing blades.

For further information write to the company, or use the Request Card at page 18. Circle No. 54.



This new V-6 horizontal diesel engine, one of two new power units for the Page walking dragline.

New Horizontal Engine for Walking Draglines

■ A compact V-6 horizontal diesel engine is offered by the Page Engineering Co., Clearing Post Office, Chicago 38, Ill. Built especially to power the load and hoist drums of Page walking draglines, this engine also features a short rigid crankshaft as well as horizontal piston travel.

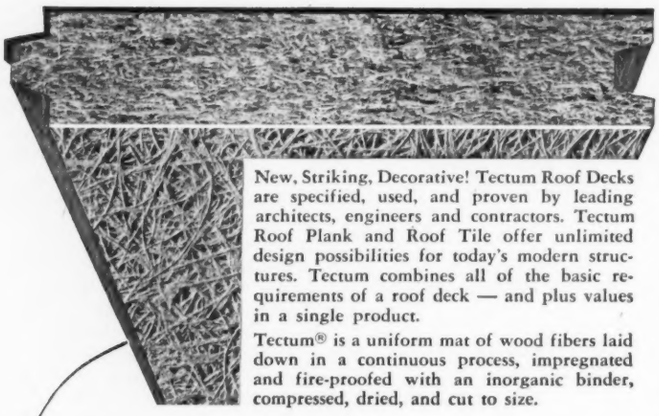
The pistons and connecting rods are exposed by removing the crankcase cover, and can be removed without disturbing the cylinder heads or the crankshaft. Valves can be individually adjusted and timed from the head end. Cylinder heads can also be inspected and removed individually. Virtually all parts are interchangeable with those of the auxiliary 3-cylinder Page horizontal engine used to drive the generator for the swing motors on Page walking draglines.

To meet the power requirements of the various sizes of Page walking draglines, the V-6 engine is available in two sizes. The unit is available in models with a bore and stroke of 12½ by 16 inches or 11 by 15 inches.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 147.

UNLIMITED DESIGN POSSIBILITIES WITH

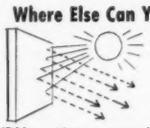
Tectum® ROOF PLANK AND ROOF TILE



New, Striking, Decorative! Tectum Roof Decks are specified, used, and proven by leading architects, engineers and contractors. Tectum Roof Plank and Roof Tile offer unlimited design possibilities for today's modern structures. Tectum combines all of the basic requirements of a roof deck — and plus values in a single product.

Tectum® is a uniform mat of wood fibers laid down in a continuous process, impregnated and fire-proofed with an inorganic binder, compressed, dried, and cut to size.

Where Else Can You Find These Attributes Combined In One Product



TEXTURAL — New — arresting, pleasing. Allows new concepts for decorative design. 65% reflectivity. Paintable if desired.

ACOUSTICAL — As good as the best, better than most. Average noise reduction coefficients up to 85%.

INSULATIVE — 3" thickness has the low "U" factor of .15. Thickness of 2" has the low "U" factor of .20.

NON-COMBUSTIBLE — Rated noncombustible under Federal Specification SS-A-118a, and by the National Bureau of Fire Underwriters, based on fire hazard tests at Underwriters' Laboratories, Inc.

LIGHT WEIGHT — Lighter than most woods. 20# to 24# per cubic foot.

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STABLE — Dimensionally stable. At humidities of 98% R. H., average dimensional change is only 15/100 of 1%.

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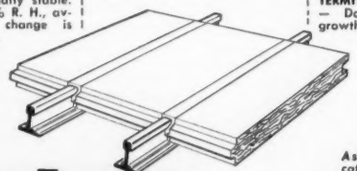
TERMITE AND FUNGUS PROOF — Does not support fungus growth or termite life.



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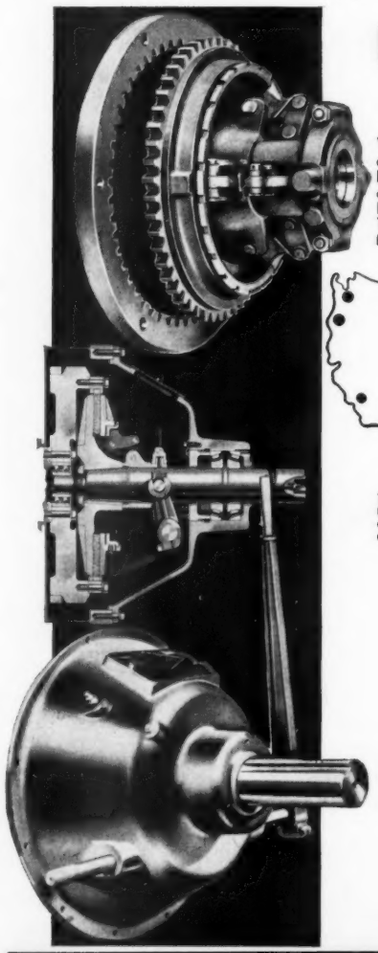
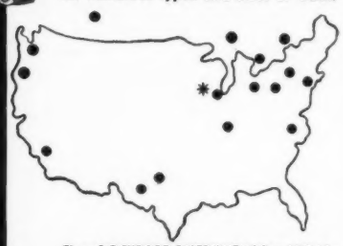
ROCKFORD Heavy Duty CLUTCHES and Power Take-Offs Are Distributed Coast to Coast



Wherever industry uses heavy duty clutches or power take-offs there is a ROCKFORD distributor conveniently close at hand to supply ROCKFORD Heavy Duty CLUTCHES, POWER TAKE-OFFS and replacement PARTS for numerous types and sizes of each.



These ROCKFORD DISTRIBUTORS and DEALERS carry a stock of clutches, power take-offs and replacement parts to insure ROCKFORD clutch users prompt delivery and service.

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Lightbourn Equipment Company, Dallas, Texas
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Wepco Equipment Company, Cleveland, Ohio
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Auto Clutch & Parts Company, Chicago, Illinois
Auto Gear & Parts Company, Philadelphia, Pa.
General Machine Parts, New York, N. Y.
Highway & Industrial Equipment Co., Inc. Raleigh, N. Carolina
R. Angus (Alberta) Ltd., Edmonton, Alberta, Canada
Maase Equipment Co., Ltd. Montreal, Canada
B-W-H Service Parts, Ltd., Hamilton, Ontario, Canada
Credle Equipment Company Utica, New York
Engine Service & Supply Company Odessa, Texas
National Supply Engine Corp. Portland, Ore. and Seattle, Wash.

ROCKFORD CLUTCH DIVISION BORG-WARNER
314 Catherine Street, Rockford, Illinois, U.S.A.

New Power Megaphone

■ A new battery-operated power megaphone, developed by Audio Equipment Co., Inc., 805 Middle Neck Road, Great Neck, N. Y., projects vocal commands over noise across the job site.

The new Audio Hailer, a small self-contained unit weighing 5 pounds, is designed for one-hand operation. It has a complete vacuum-tube amplifier built into the speaker housing, which provides sufficient amplification to magnify the human voice 1,000 times.

For further information write to the company, or use the Request Card at page 18. Circle No. 85.

Two New Truck Winches

■ Two new 7,000-pound truck winches for standard and low mounting have been announced by Gar Wood Industries, Inc., 36253 Michigan Ave., Wayne, Mich. The standard-mount winch, Model 7S, is designed for installation behind truck cabs, while the low-mount winch, Model 7L, mounts in front or at the rear of the truck chassis, or back of the cab. The low-mount winch, a space saver, allows the entire truck platform to be used for the payload.

The winches are of the worm-gear jaw-clutch drum type, designed for slow and heavy pulls with intermittent operation. A back-draft clutch insures forced engagement between the drum shaft and the drum for operating safety. The clutch is lubricated and fully enclosed in the gear case.

Winch gear case housing is of cast aluminum for faster dissipation of the heat generated during operation. A simple-to-operate rope clamp built into the drum eliminates U-bolts or other projections used on drums to secure cable.

A self-energizing safety brake stops and holds any load up to winch rating. Either manual controls at the winch or flexible cab controls are available. Drum capacity, using ⅜-inch cable, is 452 feet.

For further information write to the company, or use the Request Card at page 18. Circle No. 74.

"Ouch! I felt it again — just like pins and needles!"

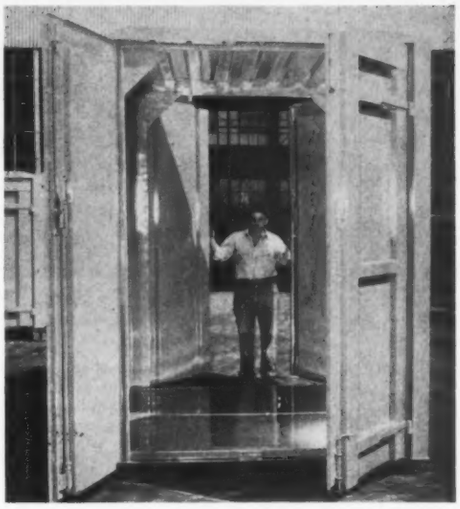
Steel-Beam Selector In Slide-Rule Form

■ The selection of steel beams for light construction jobs can be made with a new plastic slide rule available from the Everett Rader Co., Box 122, Bowling Green Station, New York 4, N. Y. By setting the span opposite the load, the section modulus required and the dimensions of the most economical steel beam available may be read under the allowable stress. On the reverse side are found commonly used steel beams and their section moduli.

A similar wood beam and girder selector, with which wood structural members may be chosen quickly, is also offered by the company.

For further information write to the company, or use the Request Card at page 18. Circle No. 113.

THIS SPECIAL PORTABLE CONTAINER for field storage of atomic-energy project supplies, equipment and instruments was developed by the Dravo Corp., Neville Island, Pittsburgh, Pa. It is modeled after the Dravo Transportainer used by contractors to protect dynamite and tools on construction jobs. Transportainers are fabricated of welded steel and equipped with skids for dragging and pushing. Weathertight construction protects the contents. The capacity of standard units is 275 cubic feet, or 6 tons. For further information write to the company, or use the Request Card at page 18. Circle No. 144.



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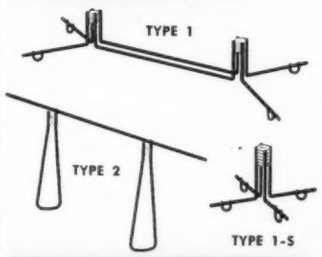
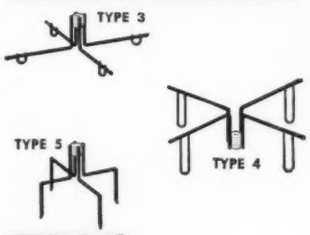
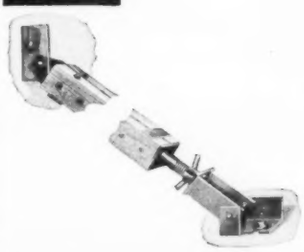


ANCHORS for BRACES



BRACES



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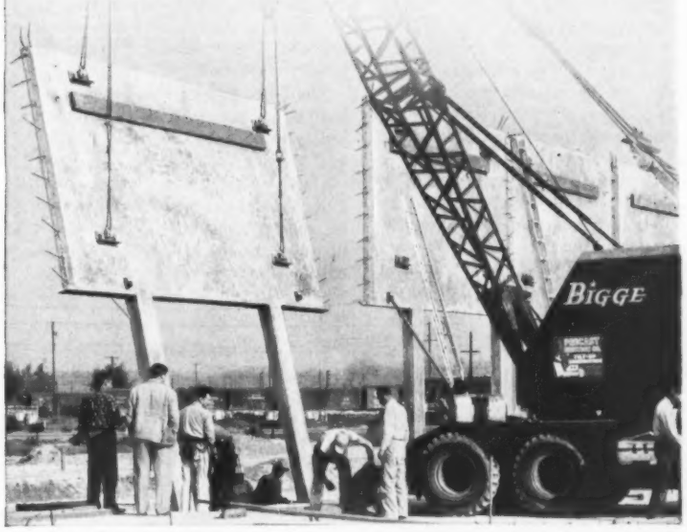

42,000 LB. PANEL being raised into position at United Grocers Warehouse, Fresno, Calif. Concrete panels are 8-inches thick with 12-ft. legs. SUPERIOR Pick-Up Inserts, Brace Anchors, and Braces were used. The exclusive pivoting action of the adjustable Braces permitted quick positioning and alignment of the panels. Contractor: Precast Erection Company, Niles, California.

Tilt—Lift—Position!—The proper type of Pick-Up Inserts and Brace Anchors and their location in the slab or precast structural member is of prime importance in order to withstand the stresses occurring when *tilting, lifting,* and *positioning.*

As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures and techniques resulting from the experience of thousands of job applications.

The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete engineering service provide a combination which offers safe and efficient handling of any precast panel or structural member.

For details request a copy of Bulletin TU-2,

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Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

EXCAVATING EQUIPMENT

This is the third in a series of articles made up of excerpts from a new book, "How To Operate Excavation Equipment", by Herbert L. Nichols, Jr., published by North Castle Books, Dept. N, 212 Bedford Road, Greenwich, Conn. Primary emphasis in this series is on the uses, adaptability, care, and safe operation of machinery.

Conveyor Machinery

THE BELT CONVEYOR is a transporting, elevating, or distributing machine made up of an endless flat belt which carries a load on its upper surface. It operates between a head and a tail pulley and is supported by idlers, which in turn are supported by a frame. These conveyors are made as small portable elevating units which are loaded with hand shovels, and as giant units which carry millions of tons of earth for many miles.

As independent units, they are well suited for rapid transportation of loose material. They have less mobility and flexibility than trucks and scrapers and are therefore used chiefly where large volumes of material are to be moved along one route. They are particularly applicable where the load must be lifted steeply or carried across rough country where road construction would be difficult. They are desirable as feeders for processing plants because they provide an even and continuous flow. They simplify traffic problems where hauling space is restricted, as in tunnels and in busy pits. However, they are not adapted to hauling big chunks which clog hoppers, damage the belt, and are likely to fall off in transit.

Their mechanical efficiency is high, as very little dead weight must be moved with the load. Friction is at a minimum, and power-consuming stops and starts are rare.

The large permanent type of belt conveyor is almost unique among machines used in connection with excavation in that it is usually custom built, and rules of design and construction are flexible, so that it can be tailored to the job and to the customer's needs or whims.

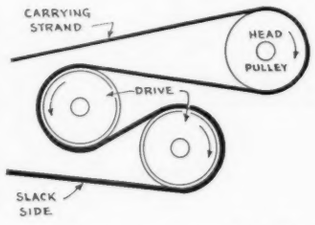
In an average installation, the belt is about half of the original construction cost, and its repair and replacement is the biggest maintenance expense. Proper care of it, therefore, is very important.

The belt extends between a head pulley (which may be the drive pulley) and a tail or return pulley and carries its load on its upper surface, usually toward the head pulley. Its upper strand is supported by idler sets whose three rollers are arranged to shape it into a trough, and the lower strand is supported at wider intervals by flat rollers called return idlers.

Belt Contact

A belt with parallel strands will have 180-degree contact with the drive pulley. This contact can be increased by a snubbing pulley on the slack side. Increasing the degree of wrap in this manner is the cheapest way to increase contact area.

Head pulley drives are adequate for short conveyors and for those so steeply inclined that the weight of the return strand maintains a high tension on the slack side. For conditions requiring greater traction,



INTERNAL TANDEM DRIVE

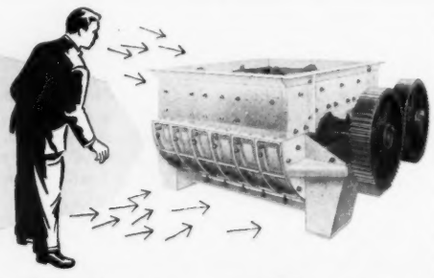
tandem pulleys are used. Up to 440 degrees of wrap can be obtained in this manner.

The belt is sensitive to tiny changes in frame and pulley alignment, which will cause it to wander out of a straight line. Internal changes in belt tension, or a splice which is beginning to pull apart, may have the same effect. Trouble with wandering can be greatly reduced by making both pulleys and frames wide enough so that the belt does not have to run absolutely straight to keep out of trouble. The wider construction is more expensive, of course, but through the years it should more than pay for itself in longer belt life and in reduced checking and adjusting.

A certain amount of belt wear from impact and abrasion occurs each time the belt goes over an idler, as it is a high point with a sag on each side. The slight but steady wear at these points can be reduced by minimizing the sag, which is affected by belt tension and idler spacing. Maximum smoothing effect can be obtained from any given number of idlers by using wide spacing near the head, where tension is greatest, and progressively narrower spacing toward the tail pulley.

There is usually very little spillage off a belt which is wide enough for its load. However, many belts are overloaded in bulk, if not in weight, and the jouncing over idlers, movements in the load, and changes in alignment result in pieces rolling and bouncing off the sides. If deck-

For OVERALL ASPHALT PLANT EFFICIENCY



...Look to the Component Parts!

The efficiency of any asphalt plant is no better than the efficiency of its individual components. Keep this in mind when selecting your pug mill mixer.

The MADSEN Model 440 Twin-Shaft Pug Mill Mixer (Patent Pending) has proven itself, in all makes of asphalt plants, to lead the field in mixing ability, low-cost maintenance and long life. The extra-large discharge gate, pressure-mixing through the paddle arrangement, the mixer contour, the patented shank design . . . help to give the MADSEN Model 440 a discharge time of approximately 4 seconds regardless of batch size!

Whether your requirements call for a 4000-lb., 5000-lb. or 6000-lb. mixer you'll find the MADSEN Model 440 tops in fast, low-cost mixing.

THE MADSEN MODEL 440 TWIN-SHAFT PUG MILL MIXER . . . is the only pug mill mixer with externally removable liner segments. This exclusive MADSEN feature means greater economy in sectional replacement and easier maintenance. For the complete story write for Bulletin 400.

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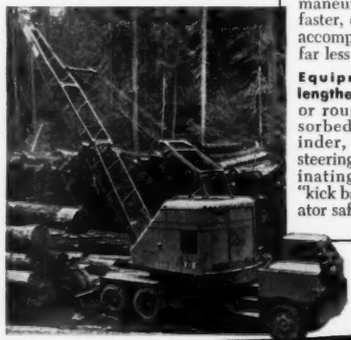
NOW! GARRISON POWER STEERING KITS for P & H TRUCK CRANES

Models 355 and 255



Effortless steering in any terrain! Get more work from your heavy-duty, wheeled equipment! Garrison Power Steering does 80% of the work of wheel turning *hydraulically*. Even in sand, soft ground, or the roughest terrain, operator has complete control of equipment with only light pressure on the steering wheel. Equipment can be maneuvered into position faster, easier. More work is accomplished each day with far less operator fatigue.

Equipment life, too, is lengthened! Jolts from holes or rough ground are absorbed by the power cylinder, reducing wear on steering assembly and eliminating dangerous wheel "kick back," increasing operator safety!

Get the full story from your distributor today!

Garrison Power Steering is available for many medium and heavy trucks, motor graders, and off-the-road equipment as standard or optional equipment installed at the factory. Kits for field installation are also available for most makes and models.

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ing is placed under the full length of the belt, or sometimes under the ends and the loading point, the material will be kept from spilling onto the return belt. A clean belt and clean pulleys and idlers mean longer belt life.

A belt conveyor will run for long periods without attention. Idlers require lubrication twice a year or less (if of the modern type with bearings and seals), a well founded and constructed frame will keep the parts in line, and properly designed and protected chutes may never clog. However, sudden accidents happen which can be very costly if their results are not controlled, and it is impossible to keep a man always on the alert for events which may not happen for years, if at all. Controls should therefore be installed which will automatically react to emergencies.

If the power fails on an inclined belt, it will tend to run backward, jamming its load into and around the loading chute. This movement can be prevented by a holdback ratchet on the head or drive pulley, which will allow free working motion but immediately lock against backsliding.

If objects jam between the belt and a pulley, if discharged material backs up into the belt, or if the belt runs off its rollers, the power requirement will be sharply increased. If drive is electric, an automatic overload switch in the line can be set to cut off the power and prevent or limit the damage. It is also a good plan to use a motor which is not too big for its job.

Slacklines

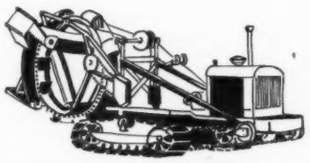
Most slacklines consist of a tower connected to a lower anchor by a heavy track cable, which can be tightened or slacked off by a winch operating through a lighter cable (the tension line) and pulleys. A dragline-type bucket is suspended from the track. It can be pulled to the tower by a two-speed winch and tends to move toward the anchor by gravity. When pulled close to the tower, it is dumped automatically into a hopper or onto a pile.

The digging ability of these buckets is comparable to that of draglines, and the ability to handle hard formations increases rapidly with size. The carrier prevents them from bouncing and losing contact as much as a dragline bucket, but the inability to vary the direction of digging makes it more difficult to cope with boulders or seams of harder material sloping across the digging line.

A bottomless crescent bucket may also be used with this type of slackline excavator. Such buckets are generally used for open stockpiling but can dump in a hopper that is partly buried in the pile or that has a hard-surfaced ramp to carry the bucket to it.

A drag scraper generally has a mast at the low side of the pit and a tail anchor which can be moved around the high side. The bottomless bucket is dragged by an inhaul line which is reeved through a pulley mounted in the mast to a winch drum. It is pulled back by a winch (backhaul) line reeved through an anchor pulley.

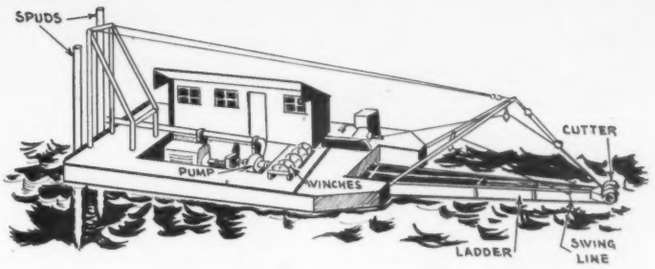
Both slacklines and drag scrapers are at their best in digging extensive areas of uniform material. Such conditions are often found in surface mining of sand, gravel, clay, or mine tailings. Large units may be used effectively in removing blasted rock.



if breakage is good and the bucket path can be kept parallel to the face.

In suitable work, these machines are highly efficient because of the small number and light weight of moving parts.

A drag scraper installation is less costly than a slackline. It is equally satisfactory in many jobs, but when



the haul is long or the digging deep under water, the higher speed of the slackline makes it much more desirable.

The Euclid loader is made up of a heavy frame carrying a plowshare which loosens soil that is picked up by a belt conveyor which discharges it high up and to the side. The conveyor is driven by a rear-mounted engine. Movement of the loader depends on a towing tractor. It acts as a semitrailer, will turn at angles sharper than 90 degrees with a radius of about 37 feet, and it can be backed.

A wheel ditcher works by lowering a turning wheel equipped with buckets to the ground and walking away from it. The buckets cut the earth and carry it forward to the top where they dump most of it on a conveyor which carries it to the side and piles it.

A ladder ditcher carries a chain of digging buckets on a boom. In general, operation is similar to that described for wheel ditchers.

Hydraulic Dredging

Hydraulic dredges consist of floating pumps which suck in mixtures of soil and water and deliver them to a disposal point through a pipeline. They can excavate underwater soil or waterside banks, transport the soil mixed with water through pipes, and rough grade it on fills. A single machine with proper accessories may perform all three functions, or it may dig without transporting, or transport from a hog box without digging.

It is usual for a dredge to cut to bottom grade at each stand, regardless of the depth of material to be moved. Moving the dredge with the attendant work of shifting anchors and extending discharge lines is laborious.

A dredge is generally run on a two or three-shift basis. Because of its high initial cost and high over-

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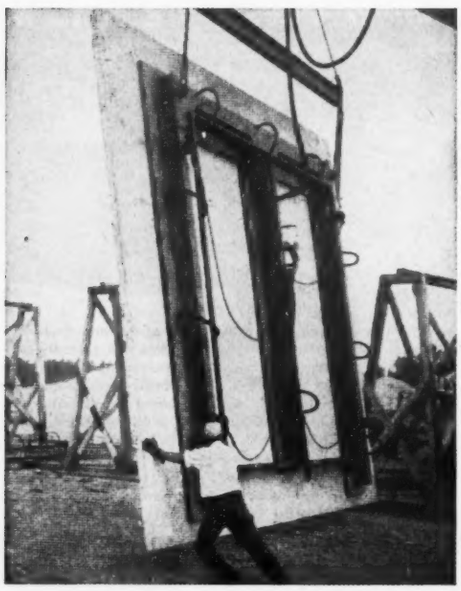

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No inserts or strongbacks to adjust . . . a turned valve does the work. Harnessed atmospheric pressure provides temporary reinforcement — eliminates point stresses and the need for additional steel.

EARLY STRIPPING — EARLY ERECTION

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Contractor: Concrete Casting Co., Kansas City, Mo.

head, it is desirable to work it as continuously as possible. It will often be run through lunch periods by a split crew.

Dredge discharge lines can be rather readily extended at either end but are difficult to move. A floating pipe is unwieldly to manage in long towed sections, particularly in a wind, and it is a slow job to disassemble and relocate it piece by piece. Shore pipe must always be taken apart for moving. It should be flushed out with clean water first to lighten it.

As the dredge advances, the discharge pipe must be lengthened. This is done by disconnecting at a joint immediately behind the hull, placing another section by means of a light floating crane, and refastening.

Wherever possible, two or more discharge openings with control by diversion valves are used. This system permits adding pipe without stopping the dredge.

Hydraulic fills may be wasting operations to dispose of unwanted spoil from channel dredging, they may be a secondary but valuable part of the work, or the dredging may be done merely to get the fill.

Hydraulicking

Hydraulicking is a dry land dredging operation. Banks are washed down by high-pressure water jets and the mixed spoil and water moved by gravity, pumps, or both to a fill. The operation is used in building hydraulic fill dams when sufficient material cannot be obtained by dredges, for breaking down banks, cleaning rock for blasting, and under various special conditions. Hydraulicking equipment consists of water pumps, suction and discharge lines, monitors, and a flume or sluiceway to carry the mixed water and soil.

The primary requirement of dam hydraulicking is the correct selection of material. Definite proportions of fines, sand, and gravel are usually required, and these are often not found in a single bank.

(TO BE CONTINUED NEXT MONTH)

Hydraulic Sprocket Pullers Are Covered in New Manual

■ Removing and installing the drive sprockets on crawler tractors with the aid of hydraulic sprocket pullers is covered in a booklet from the Owatonna Tool Co., 381 N. Cedar St., Owatonna, Minn.

The new manual describes and illustrates the portable and hydraulic sprocket puller and installing sets in both 50 and 100-ton capacities. These tools are operated and powered with the OTC remote-control center-hole Power-Twin rams, which are utilized for other pulling operations as well.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 29.

Data on Screw Conveyors

■ A new catalog and engineering data book on its screw conveyors is available from the Continental Gin Co., Industrial Division, Box 2614-Q, Birmingham 2, Ala. Included in this catalog are various sizes and types of conveyors illustrated with photographs and line drawings.

Engineering data is offered to guide the user in the proper selection of size and type of conveyor, and accessories.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 5.

The American Util-A-Lift hoisting device on the Minneapolis Util tractor lifts building materials to a height of 25 feet.

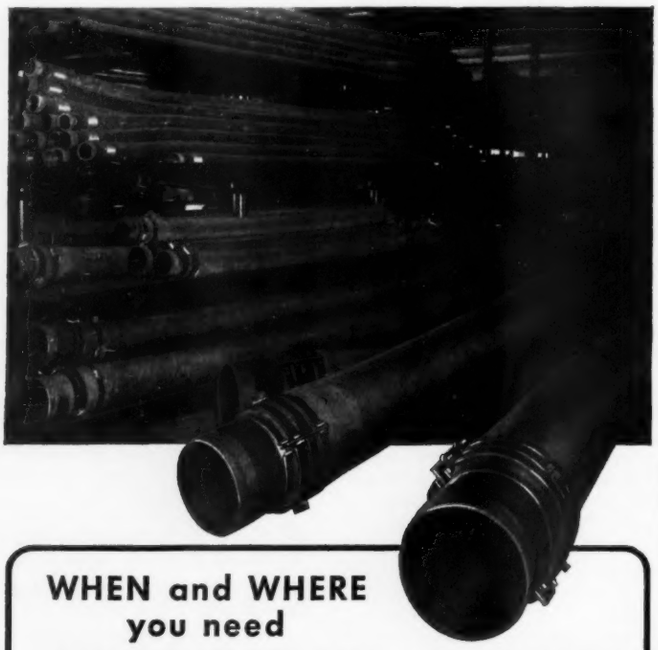
Hoisting Attachment For Wheel Tractor Lifts Loads to 25 Feet

■ A hydraulic hoist mounted on a properly counterbalanced tractor lifts a load of 1,500 pounds up to 25 feet off the ground. The pallet-fork hoisting device is particularly recommended by the manufacturer for lifting block and brick which have been assembled in proper load dimensions by the supplier.

As power units, the present models of the American Util-A-Lift hoist employ the Minneapolis Moline Util tractor featuring six speeds in either direction. With rear wheel steering, the units offer a turning radius of 17 feet.

In addition to the 7-foot hydraulic tower mounted on the basic loader, many other industrial tools are available as attachments for the Util-A-Lift. Dozer blades of varying widths can be mounted on the basic unit. Aggregate and cement buckets and a material skip are also available. A heavy-duty V-shaped snowplow also attaches to the unit.

For further information write to the American Road Equipment Co., 4302 N. 28th St., Omaha, Nebr., or use the Request Card at page 18. Circle No. 83.



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SUCTION HOSE

Call for "RIGHT NOW" delivery—any size—1½" through 10"—from a nearby Continental Warehouse

You can bank on fast delivery whenever you call *any* Continental Warehouse. They *all* carry big stocks of Suction Hose . . . many of them have both 8" and 10", ready to put on the road the minute you call.

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So the next time you need Suction Hose, or any other hose*, call or wire your nearest Continental Warehouse. You'll like the service you get.

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*A complete line for Contractors: Air, Water, Steam, Suction, Discharge and Pile Driver Hose. Protective Clothing, Boots and Gloves. Send for latest catalog.

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CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 2, Ind. 309 North Capitol Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 81 Murray St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
PITTSBURGH 21, Pa. 607 Brushton Ave.
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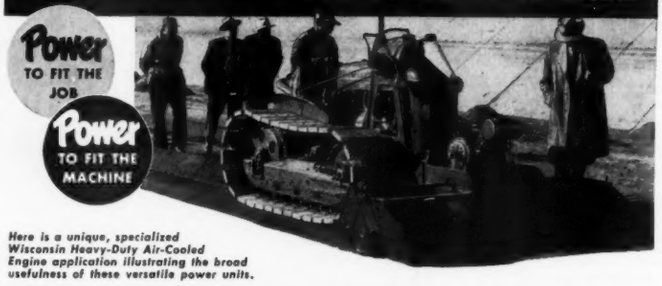
WISCONSIN-POWERED
Sand Skimmer Does Work of 15 Men

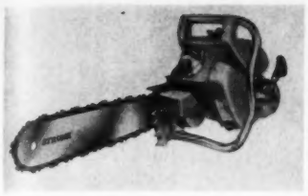


Here is a unique, specialized Wisconsin Heavy-Duty Air-Cooled Engine application illustrating the broad usefulness of these versatile power units.

This machine is used for skimming the scum from the top of the filtration beds at the Kassler plant, Watertown, Colo., performing in 5 hours a task that normally consumed 182 man-hours when the job was done by hand. It permits putting the filter beds into operation in proportionately shorter time. This sand skimmer was developed as a cooperative project between the Denver Board of Water Commissioners and the Howry-Berg Steel & Iron Works, Inc., Englewood, Colo., and is powered by a 4-cycle single cylinder Wisconsin Air-Cooled Engine.

Wisconsin heavy-duty engineered design and construction, plus dependable AIR-COOLING and adaptability to installation on any type of equipment requiring power components from 3 to 36 hp., are factors that make Wisconsin Engines the *preferred* power in the construction and maintenance fields.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN



A FEATURE OF THE new Strunk PD-3 chain saw is a special diaphragm carburetor which allows the saw to cut with full engine power in any position, even upside down. Other features include a completely pressurized fuel system and automatic lubrication. A positive chain tightener has been added. The guide bars, which have been treated with a special alloy, are available in lengths of 16, 19, and 24 inches. For further information write to the Strunk Equipment Co., Coatesville, Pa., or use the Request Card at page 18. Circle No. 67.

Parts Catalog Treats Self-Propelled Tamper

■ A detailed parts manual showing its self-propelled multiple-tamper, the Vibro-Tamper, has been released by the International Vibration Co., 16702 Waterloo Road, Cleveland 10, Ohio. The various units of the machine are identified in over-all and detailed photographs. Exploded views and drawings give complete breakdown of every important mechanism, such as the vibrating units, transmission, power pack, and gear reducers. A lubrication chart and operating instructions complete the book.

Widely used in macadam and bituminous-concrete road and airport construction, the Vibro-Tamper permits single-course construction of subbases to a compacted depth of 12 inches.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 9.

Safety Note — When ladders are used for roofing jobs, they should be lashed securely.

New Dump-Truck Body And Hydraulic Hoist

■ A new dump body and hydraulic hoist combination, said to carry up to 1,000 pounds more payload than most units of similar size, is announced by the Galion Allsteel Body Co., Galion, Ohio. The Allsteel body No. 12N-5 with hoist No. 77353 is recommended for use in areas where strict weight laws are in effect.

The No. 12N-5 body may be constructed of either 10-gage or 12-gage high-tensile steel. Full-length 6-inch-wide running boards, box-type side braces, and corner posts are features. The head and tailgate are 6 inches higher than the sides. The understructure employs 4-inch channel cross-members and 5-inch I-beam longitudinals.

Bodies are available in lengths to 14 feet and capacities to 12 yards. The hoist is of the 7-inch twin-telescopic type and has a capacity of 23 tons.

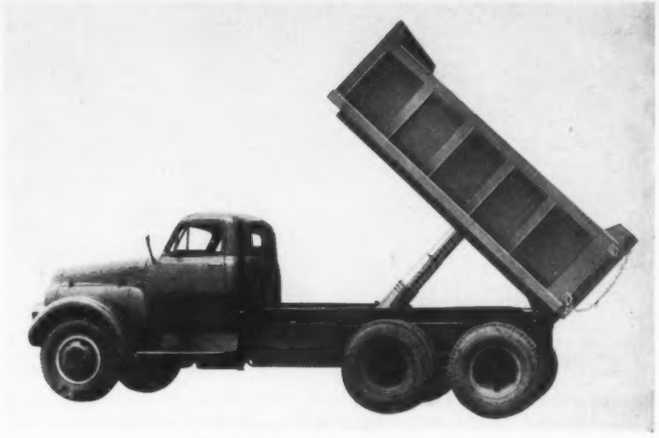
For further information write to the company, or use the Request Card at page 18. Circle No. 3.

Increased Power Rating For Crawler Tractor

■ An increased horsepower rating for its Model TD-24 tractor has been announced by the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. The present model of the TD-24 is rated at 190 engine hp and 155 drawbar hp. Maximum drawbar pull is rated at 40,000 pounds, operating weight of the new model is 42,884 pounds.

The power plant for the unit is the International D-1091 diesel engine with a bore and stroke of 5¾ x 7 inches and a rated governed speed of 1,400 rpm. The TD-24 is designed to work with scrapers up to 27½-cubic-yard capacity, angle-blade dozers up to 14½ feet, and straight-blade dozers up to 12¼ feet.

For further information write to the company, or use the Request Card at page 18. Circle No. 24.



◄The new Galion 12N-5 body with Model 77353 hoist.

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4 BIG ADVANTAGES
with
UNIVERSAL SPIROLOC® FORM TIES!

1. Greater tie strength for less money
2. Lower material and labor cost
3. Faster . . . simpler heavy duty tieing
4. More forming flexibility . . . handle any forming condition

STANDARD SPIROLOC ASSEMBLY

SPIROLOC WORKING LOADS
6750# Tie with ⅜" Rod
13000# Tie with ½" Rod
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- Consists of two nut washers, two Stud Rods and a "HI-TEN" threaded Tie Rod
- Permanent, re-usable equipment...only tie rod is expended
- Provide positive break-backs up to 2"
- RENTED . . . SOLD . . . Rented with purchase option.

SPIROLOCS are furnished with either Handle or Nut Washers

SPIROLOC CONE NUT ASSEMBLY

The ONLY Form Tie with an absolutely positive internal spreader . . . Eliminates wood spreaders.

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THE
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BARRICADE
COMPLETE WITH
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FOR NO MORE THAN
THE OPERATING COST
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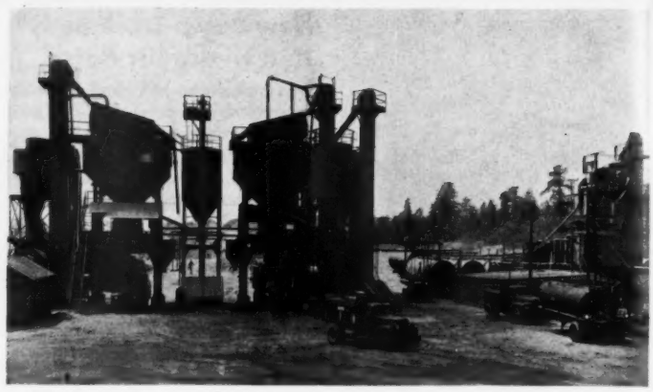
407-c COMMERCIAL CENTER ST. • BEVERLY HILLS, CALIF.

Off-Highway Dump Truck—Latest Dart truck is this 20-ton end-dump unit. Built on a 120-inch wheelbase and rated at 225 to 275 hp (optional), the diesel-powered unit turns in a 21-foot radius. Power steering and standard or torque-converter transmission are offered in this model. For details circle 116 on card at page 18, or write to the Dart Truck Co., 2621 Oak St., Kansas City 8, Mo.



Asphalt Plant—The three plants shown in this location were made by the McCarter Iron Works Inc., which builds semiportable and stationary plants in 1, 1½, 2, and 3-ton sizes. The company also offers as individual units hot-mix or combination center-outlet dryers, mixers, asphalt buckets, and other components. For details circle 107 on card at page 18 or write to the company at Norristown, Pa.

All New In '54

New
Rugged-Duty Series LD & WD
Toughest contractor's body available. Standard lengths 12 to 17 feet. Available for Hercules front telescopic or underbody hoists.

COMPLETE NEW LINE of Hercules Contractor Bodies!

Your answer to every hauling need . . . These 4 *new* series of Hercules bodies have many *exclusive* new features that will give you more dependable, more profitable service on the toughest construction jobs.

Get the most for your money. Specify Hercules at your local truck dealer or nearby Hercules distributor . . . or write to the factory for complete details on these new Hercules cost cutting bodies.

New
All-Purpose Series CD. *Extra duty contractor's body. Standard lengths 10, 11, 12 feet. Available for Hercules front telescopic or underbody hoists.*

New
Standard Series D. *The standard of the industry for general contractor's work. Standard lengths 8, 9, 10 feet. Also available with removable or hinged sides, corner posts, tailgates and other contractor-preferred options.*

New
Solid Steel Platform Series PL. *For 60, 72, 84, 102-inch cab-to-axle trucks. Available for front telescopic or underbody hoists.*

9456

Hercules
buy from the line of strongest design
HERCULES STEEL PRODUCTS CORPORATION • GALION, OHIO

Heavy-Duty Screen For Sizing and Scalping

■ The new improved Mesabi vibrating screen, built for difficult applications, is the subject of a bulletin from the Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn. Covered in detail are the structural features and operational characteristics that make the new Mesabi suitable for scalping or sizing of aggregates. Screen capacity, size selection, and installation are detailed.

Structurally, the new screen includes 18-inch car channel reinforced with 8-inch wide-flange cross beams on 4-foot widths, and 18-inch I-beams reinforced with 8-inch wide-flange cross beams on 5 and 6-foot widths. Pan sides are ⅜-inch thick on 4-foot widths, and ½-inch thick on 5 and 6-foot widths.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 26.

Safety Note—When a workman is using a step ladder, he should make sure the spreader is locked.

Easy to move... saves hours of expensive time

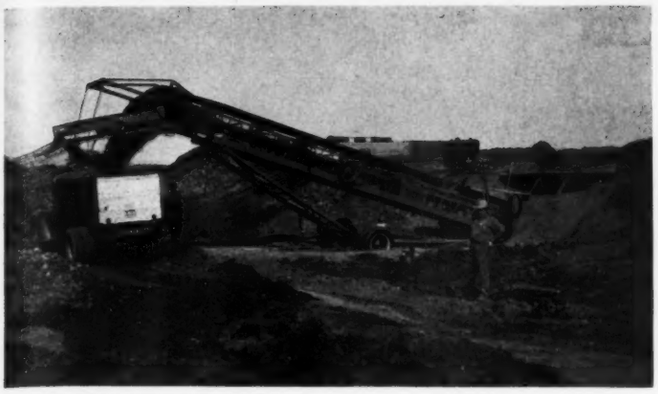
J. A. Berst, Rowley-Berst Corporation, Cincinnati contractors, says:
". . . there is no comparison in cost. The Buck hoist can be raised and lowered . . . at different locations with practically no delay."

BUCK
Automatically-portable, heavy-duty
HOISTING MACHINE*
can save hundreds —even thousands of dollars for you—on job after job.

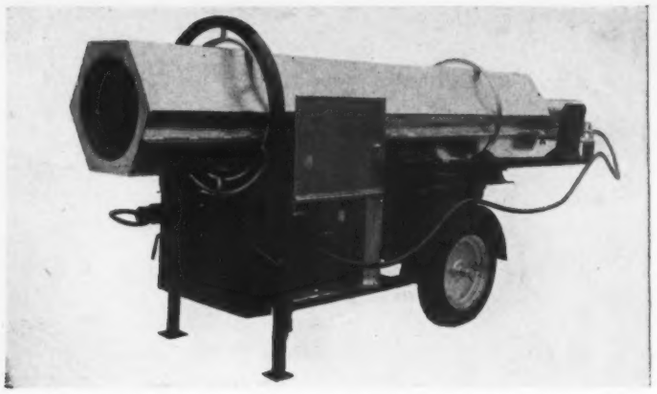
*TRADE MARK REGISTERED

Write for full details — or ask for an on-the-job showing today. No obligation.

BUCK EQUIPMENT CORP.
208 BUTLER STREET
CINCINNATI 2, OHIO



Conveyor With Screen—This 50-foot-long Kolman portable field conveyor has a 36-inch belt and is powered with a 31-hp engine using a multiple V-belt drive. It is shown operating on a screening unit equipped with a Kolman Type SB vibrating screen that folds back under the conveyor for towing. For details circle 106 on card at page 18, or write to the Kolman Mfg. Co., W. 12th St., Sioux Falls, S. Dak.



Aggregate and Material Dryer—The new Model AD-7 Flash-Flame dryer features a free-running clutch that enables the operator to run the power source and the fuel and burner without turning the drying drum. This convenient arrangement also increases the life of wearing parts. For details circle 111 on card at page 18, or write to the Tarrant Mfg. Co., 2700 Granger Ave., Saratoga Springs, N. Y.

Wire-Rope Ordering Plan

■ A booklet of wire rope recommendations is designed to provide a simplified ordering plan and reference for users of wire rope. The new Roebling catalog is divided into 16 indexed sections which give detailed information on wire rope for specific requirements.

The new Roebling plan for ordering uses code numbers, as indicated in the catalog, for different sizes and types of wire rope. Orders are made simply by giving the code number and length of rope required. Purchasers may also mention end-use for the rope to insure proper lubrication for given applications. Replacement or additional orders can be placed in the same way to assure that subsequent ropes will be identical with the original material received.

To obtain this literature write to the John A. Roebling's Sons Corp., 640 S. Broad St., Trenton, N. J., or use the Request Card at page 18. Circle No. 21.

Remember—Safety Is No Accident.

FOUNDATION CONSTRUCTION

CAISSONS
SHAFTS
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SPECIAL DRILLING PROBLEMS

Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

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Bethlehem dowel units being installed near Weedsport, N. Y., during the construction of that portion of the highway. *Contractor:* Potter DeWitt Corp., Pavilion, N. Y.

World's Longest Express Highway Nears Completion

The New York Thruway is nearing completion. On it, a motorist will be able to travel north to Albany and all the way across New York state without a single stoplight or grade intersection.

The Thruway is designed for 70-mile-an-hour speeds. The pavement is finished to provide a tire-gripping, nonskid surface in all types of weather. At all points along the highway there is 1000-ft forward vision, and landscaping is designed on a broad, sweeping scale to relieve monotony.

The main route of the Thruway extends from New York City to Buffalo. When the entire system is completed, however, motorists can travel comparable highways from Buffalo north to Niagara Falls and south to Pennsylvania, and from Albany to Massachusetts.

Opposing streams of traffic are separated by a grass medial strip varying from 20 to 150 ft wide and more. Steep grades have been eliminated, with maximum rises of 3 ft in every 100. Eighty per cent of the highway will be 4-lane, the remainder 6-lane.

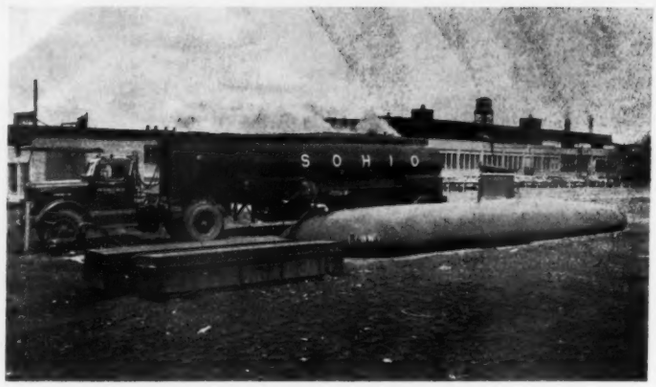
The materials used in building the Thruway were selected for longevity. The 9-in. cement pavement rests on a 12-in. granular base. Concrete-reinforcing bars and dowel units are two of the Bethlehem Steel highway products being used at many points along the Thruway. In addition, Bethlehem structural steel was used in several hundred bridges and overpasses and Bethlehem guard rail, both beam and cable types, protects many miles of the highway.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

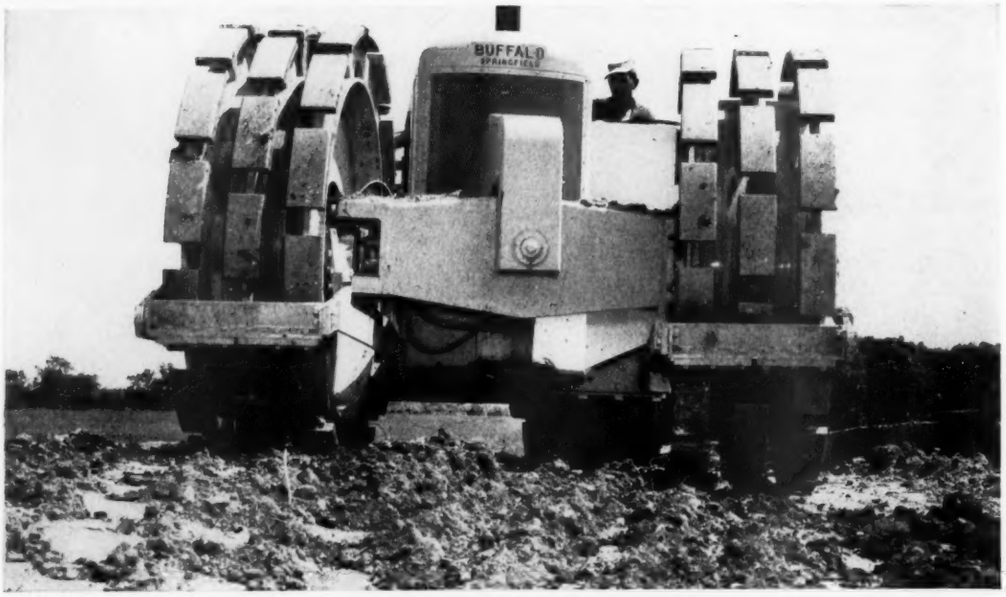
BETHLEHEM STEEL



Mobile Fuel Supply—Collapsible fuel tanks that can be carried by two men are being tested for storing gasoline at the job site. The Goodyear tanks, with capacities from 900 to 10,000 gallons, are made of nylon and coated with petroleum-resistant synthetic rubber. For details circle 108 on card at page 18, or write to Dept. 751, Aviation Sales, Goodyear Tire & Rubber Co., Akron 16, Ohio.

Power Plant on Wheels—Martin trailers were recently mounted with Caterpillar D397 diesel-electric generators by Cleveland Bros. Equipment Co., Wilkes-Barre, Pa., to provide mobile power for Bucyrus-Erie 120B electric shovels on the Brewster contract for the New York State Thruway near Kingston, N. Y. For details circle 110 on card at page 18, or write to the Martin Machine Co., Kewanne, Ill.

You've never before seen Compaction like this!



Announcing the new and revolutionary

Buffalo-Springfield Kompactor

What do we mean by "new"? There's *never* been anything like it before!

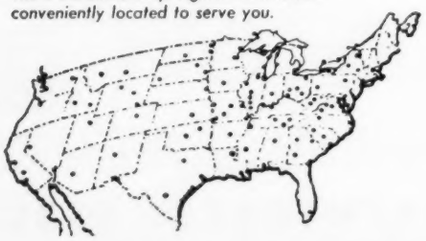
Why do we say "revolutionary"? Because the Kompactor is changing *drastically* the time and cost elements in soil compaction jobs!

Here are the spectacular results of tests in the field:

The Kompactor has met density requirements in one fourth the number of passes required with large sheepsfoot, vibrating, or heavy pneumatic-tired rollers. One contractor reports a cost savings of 50% on an embankment job!

The Kompactor is self-propelled, reversible, and easy to maneuver on steep embankments, can work in close to abutments, culverts, etc.

There's a Buffalo-Springfield Distributor conveniently located to serve you.



The unique rolls of the Kompactor are *segmented*. The staggered "islands" that form the rolling surface enter loose material with minimum displacement, either forward or horizontally. They leave without disturbing compacted areas in any way. All compaction effort is *downward*, resulting in greater and more uniform density from lower elevations to top surface. As a result, *two passes with the Kompactor will often meet density requirements!*

Before you bid another soil compaction job, find out more about the Buffalo-Springfield Kompactor. It may completely change your time and cost picture, give you a clear-cut advantage in bidding those close jobs!

Write today for full information.

The Buffalo-Springfield Roller Co.
Springfield, Ohio

BUFFALO SPRINGFIELD
THE STANDARD OF COMPARISON
SPRINGFIELD, OHIO

THE LEADER IN ROAD ROLLER DESIGN AND MANUFACTURE.

Tensioning Materials For Prestressed Concrete

■ A new catalog on tensioning materials for prestressed concrete is available from the John A. Roebling's Sons Corp., 640 S. Broad St., Trenton, N. J. The literature gives detailed information on characteristic properties of Roebling wire and strand, and includes descriptions and photographs of various construction jobs in which prestressing has been used.

Featured in the new Roebling catalog are uncoated prestressed concrete strand for pre-tensioned bonded design, and anchor fittings for post-tensioned design. Details are given on post-tensioned design as applied to the Canas River Bridge in Cuba and a California garage which used four of the largest prestressed concrete girders ever fabricated.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 63.

Bulletin on Shores

■ Literature describing a simple adjustable shore is offered by the Elis Equipment Co., Inc., 211 Northwest 4th St., Oklahoma City 2, Okla. The bulletin shows the Elis shoring hardware which can be used in conjunction with the Elis Stick, a precut shore member, or with any 4 x 4 cut to suitable standard length.

The metal items consist of a shore clamp, a jack, a slip-in shore holder, and a shorehead clamp. Several types of shores that can be made are illustrated. These include a lower shore member consisting of the Elis Stick with two shore clamps attached; a purlin made of the Stick with a shorehead clamp attached near the end, and a shorehead consisting of the Stick with the shorehead clamp attached near the center.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 16.

New Schramm Manager

The manager of sales promotion for Schramm, Inc., Arno O. Witt, has been made manager of export sales for the West Chester, Pa., manufacturer of air compressors and construction tools.

Land-Clearing Team—The Ateco Rock Ripper with its new deep-cutting root knife is teamed with the Peterson "stringer" on this Cat D8 tractor. For details on either product circle 109 on card at page 18, or write to the American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif., concerning the ripper; or to the Peterson Tractor & Equipment Co., San Leandro, Calif., about the "stringer".

Reciprocating-Blade Saw—The new gasoline-powered Wright saw with a reciprocating blade recently cut through each end of about 450 old street-car track ties in a single day. This Bronx, N. Y., job, which involved raising the elevated train structure 8 feet, gave the saw a severe test. For details circle 112 on card at page 18, or write to the Wright Power Saw & Tool Co., 292 Longbrook Ave., Stratford, Conn.

Data on Concrete Roofing

■ Fireproof and insulated roof decks are described in three new technical folders issued by the Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill. Poured-in-place Vermiculite concrete over vented-steel roof decks is a recent development that permits considerable flexibility in joist spacing and slab thickness.

Vermiculite concrete roof decks over paper-backed wire lath are the subject of two folders covering steel or concrete-joist construction where the joist spacing does not exceed 32 inches on centers. One folder gives alternate designs for regions where temperatures are 50 degrees F or above during the pouring and curing period.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 6.

Truck Crane Booklet

■ A new booklet on P&H truck cranes has just been printed. Covering P&H Models 255-A, 355-A, and 555-A, the bulletin includes on-the-job pictures and gives complete descriptions and specifications of important features. Carriers, power plants, P&H torsion bar front axles, and convertibility are topics discussed.

The live roller circle of P&H design, the machinery decks of each model, and the direct-acting hydraulic controls are illustrated. A feature of the booklet is a story on the taking down of the boom for road travel.

To obtain this literature write to the Harnischfeger Corp., Small Excavator Division, 4602 W. National Ave., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 41.

E. P. Palmer Dies

Edward P. Palmer, 1953 winner of the Moles award for outstanding achievement in the construction field, and a partner in Senior & Palmer, New York, N. Y., construction firm, died July 12 in his home in Stamford, Conn.

Born in Doe Run, Pa., in 1884, Mr. Palmer had been engaged in construction in New York since his graduation from Swarthmore College in 1906. He was associated with the building of New York City subways and the New York side anchorage of the George Washington Bridge.

GET TRUCK PAYLOADS!

with the DEMPSTER DIGGSTER® GRD-101

The two photos above show some very important advantages you get when you use a Dempster-Diggster GRD-101. Photo directly above shows you why you have no truck shock with a Dempster-Diggster. You can lay bucket in truck body, trip latch and pull bucket up off load. Photo at right above shows you why you get a truck payload with a Dempster-Diggster . . . and how natural and easy it is to do so. This truck is now loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

Other very important features of the new Dempster-Diggster GRD-101 include: AN EXCAVATOR THAT NEEDS NO WHEEL TRACTION (loading of bucket is accomplished by the exclusive Hydraulic Crowd and Hoist Action of the Dempster-Diggster) . . . TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING. Here's a shovel that gives you extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster GRD-101 will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information. Manufactured by Dempster Brothers, Inc.

DEMPSTER BROTHERS

DEMPSTER BROTHERS, 484 Shea Bldg., Knoxville 17, Tennessee

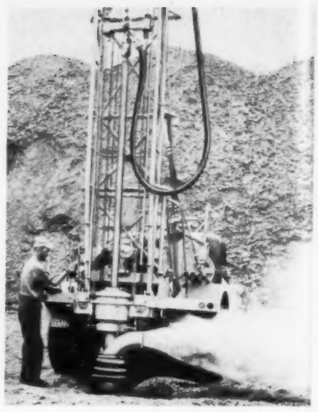
The new Hough Model HRC Payloader made by the Frank G. Hough Co.

New Tractor-Loader Has Torque-Converter Drive

■ An addition to its line of torque-converter-driven Payloader tractor-shovels has been announced by The Frank G. Hough Co., 762 Seventh St., Libertyville, Ill. The Model HRC is a four-wheel-drive unit with a bucket capacity of 1½-cubic-yards heaped. This new model is available with either gas or diesel engine and is equipped with power-steering.

Another feature is the Hough heavy-duty full-reversing transmission, which provides four speed ranges in either direction. It is emphasized, also, that the torque-converter drive acts as a cushion for the entire power-train to minimize maintenance and prolong machine life.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 53.



New Rotary Air Drill

■ A new rotary air drill for heavy-duty service is announced by the Davey Compressor Co., N. Water St., Kent, Ohio. The Model M-8A is recommended for core drilling, water-well drilling, structure testing, and drilling of shot and blast holes. It employs a new air-blast technique said to permit the unit to drill faster than previously available rotary drills. Rated capacity is 5⅝-inch holes to a depth of 150 feet with air. Capacity is 6¼-inch holes to 1,000 feet under muddy conditions.

Suitable for mounting on any make of truck, the rotary drill may be driven by a power takeoff from the truck engine or by a separate gasoline or diesel engine. Its 8-inch rotary table has a capacity sufficient to support and rotate 100,000-pound loads. Draw works are of the 2-drum type, with a line capacity of 470 feet of ½-inch line per drum.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 11.

CONTRACTOR HELPS SAVE $40,000 WITH ARMCO PIPE

An old bridge in White County, Indiana, collapsed and fell into 18 feet of water as the result of an accident. To the county commissioners it looked like an $80,000 headache. But then County Surveyor Lionel G. Roll came up with the idea of cutting costs with Armco MULTI-PLATE Structures in place of a conventional bridge. Contractor Russell Hornback, Monticello, Indiana, proved he was right and made the installation in record time—and the county saved $40,000!

Three Armco MULTI-PLATE Pipe Structures were used. Two were 132 inches in diameter, the other 168 inches. All were 68 feet long. These structures were completely assembled in only 100 man-hours and 20 machine-hours.

Then the MULTI-PLATE Pipes were rolled into place and backfilled. A roadway was built on top of the fill, berms seeded, and Armco FLEX-BEAM Guardrail installed along the sides of the road. Job done.

BID SAFELY

The low installed cost of Armco Corrugated Metal Drainage Structures lets you submit lower bids, while retaining ample profit. These structures are supplied in a wide size range for small bridges, culverts, underpasses, conduits, and for lining failing structures. Write for details. Armco Drainage & Metal Products, Inc., 4324 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Collapsed steel bridge, a total wreck.

Ready to put Armco Pipe into position.

Pipe installed. Looks like rest of road.

ARMCO DRAINAGE STRUCTURES

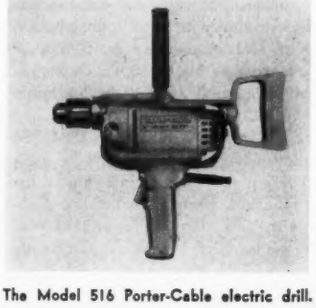
ARMCO®

Electric Hand Drill

■ A new ½-inch electric drill with a 6-amp motor is available from the Porter-Cable Machine Co., 46 Exchange St., Syracuse, N. Y. The Model 516 drill weighs 10 pounds and measures 14¼ inches long, 3½ inches wide, and 9⅞ inches high. It has a removable spade-type handle which is adjustable for vertical or horizontal position. An auxiliary two-position handle permits the operator to apply more pressure and maintain accuracy.

A trigger switch provides fingertip control, with a push-button lock for one-hand operation. The drill has a ½-inch gear-type chuck. Bit capacity is rated at ½-inch for steel and 1⅜ inches for wood.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 45.



The Model 516 Porter-Cable electric drill.

The Series 81 Ross straddle carrier, a new 20,000-pound-capacity machine.

New Straddle Carrier Of Medium Capacity

■ An improved medium-capacity straddle carrier is now available from the Clark Equipment Co., Battle Creek, Mich. The Series 81 Ross carrier is a 20,000-pound hydraulically controlled machine.

Among changes in the new unit is a larger redesigned cab which provides better visibility. A further improvement is the use of removable compartmentalized covers that give accessibility to all working parts of the superstructure, including the engine and hydraulic system.

In addition, the operation of the hydraulic hook swing has been accelerated and the load-hoisting speed has been increased from 18 to about 35 fpm. The standard power plant for the Series 81 Ross carrier is a Hercules 6-cylinder truck-type engine, with a Ford V-8 engine available as optional equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 161.

Book on Aluminum Welding

■ The latest developments in aluminum welding are described in a book from the Aluminum Company of America, 733 Alcoa Bldg., Pittsburgh 19, Pa.

Photographs, drawings, and text present all the practical methods for welding aluminum, including torch welding, arc welding, inert-gas shielded arc welding, resistance welding, and pressure welding.

Special attention is given to the selection of the correct welding method, the performance of welds, the welding of aluminum castings, and the control of welding quality.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 95.

New Tool Tensions Concrete Form Strap

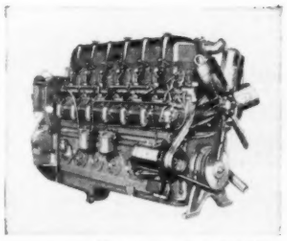
■ A new tensioning tool for strapping concrete forms is manufactured by A. J. Gerrard & Co., 1950 Hawthorne Ave., Melrose Park, Ill. The Formbinder operates from any position to tie floor, wall, or bridge forms.

The new tool handles all standard gages of form strapping. The strapping is fed to the tool through an open side with no threading through a slot. The strap is simply nailed to one side of the form, drawn tight with the Formbinder, and nailed again to the form.

Steelbinder form strapping, in ¾ x .030-inch size, in coils of 150 and 500 feet, is offered especially for use with this device.

For further information write to the company, or use the Request Card at page 18. Circle No. 103.

reduced to $16.32



Horsepowers, 30 to 255. Two-cycle. 2, 3, 4, 6-cylinder models. Speeds to 1800 rpm. Stationary, mobile, marine. Diesel-generator sets

We can't sell you just one. We will sell you 30 to 255 "horses" at the lowest price you can buy diesel power: $16.32 a horsepower for the 6-cylinder model.

If you know diesel, you know there is nothing else like it. A diesel will take on any job you might give to a gasoline engine — and do it for one-third the cost. Not only that, it is simpler to maintain.

Buyers no longer ask *whether* diesel but *which* diesel. Which will deliver the most horsepower for the money? The most horsepower per pound of weight? Which is the easiest to service?

All three questions have one answer: *the P&H Diesel.*

P&H Diesel Engine Division, Harnischfeger Corporation, Crystal Lake, Ill.

THE P&H DIESEL

lowest price per horsepower . . .
lowest weight per horsepower

Front-End Shovel Used To Clean Silted Sewer

Tractor with attachment is lowered into underground conduit for removal of sand and gravel left by flood

Tightly packed sand and gravel is removed through an opening in the top slab of the storm sewer to make room for the tractor shovel and pumps. A Flexible sewer-cleaning machine with Sauerman scraper bucket is used in this operation. *Ray Day Photos*

One Of The toughest maintenance problems ever faced by the city engineer's office in Salt Lake City, Utah—restoration of 9,000 feet of flood-damaged storm sewer under one of the city's main streets—has been met by city crews for a total cost of about 75 per cent of the original contractor's estimate. But it was a challenging job which required considerable ingenuity in placing machinery.

The big storm sewer, which runs almost the length of 13th Street South to the Jordan River, was built many years ago to a design capacity of 400 cfs. The reinforced-concrete box is 7 feet high and 8½ feet wide except at intersections, where the structure is five feet high and 12 feet wide. These wider sections occur at intervals of from 400 to 800 feet.

The sewer box carries runoff water from the confluence of three principal drainage watersheds to the Jordan River. These drainage areas develop streams which emerge from Parley's Canyon, Emigration Canyon, and Red Butte Canyon. The storm sewer picks up the water brought together by these streams, and carries it under the street level across the city to the Jordan, which in turn flows into Great Salt Lake.

One of the worst floods ever to hit Salt Lake City occurred in 1952, not long after a routine inspection had found the sewer in good condition.

When the force of the flood hit the intake end of the storm sewer, it was apparent at once that trouble was in the making. The entrance quickly filled up, and before the storm had run its course, water was flowing two to three feet deep down 13th Street South.

The control of those floodwaters was a battle in itself, and when the fight was over, an inspection was made of the sewer to see how badly it had silted. It was in a sorry state. Through practically 100 per cent of its length, the big hydraulic artery was at least half full of tightly packed sand and gravel. The hydraulic force and flooding action of water had backed the material into the pipe at 100 per cent of optimum density.

Only One Bid

Realizing that important measures would have to be taken promptly, the city immediately advertised for bids to clean the muck from the drain. There was only one bid, and that came from a firm which gave a figure of $63,000 and required that the city assume all labor, engineering, and allied costs necessary to get the job done. This price bid was made despite the fact that a parallel storm sewer was being laid—a new 60-inch bell and spigot reinforced-concrete pipeline—which was designed to help in case of any similar future emergency. This construction job was handled under contract by Enoch Smith Sons Co., Salt Lake City.

Since city funds were at a low ebb—largely because of emergency appropriations for storm damage—city authorities reluctantly decided to gamble on doing the job cheaper with their own hired labor forces.

The job was obviously too tough for hand labor, and since that method would have been prohibitive in cost, some adequate scheme of mechanizing the excavation job had to be devised. City forces were soon settled on an interesting combination. Using small compressors and jackhammers, crews broke out the top slab of the storm sewer at intervals of about 300 feet, making holes 22 feet long and 8½ feet wide. Two special Flexible sewer-cleaning machines, built by Flexible Sewer Rod Co. of Los Angeles, and powered by Wisconsin 25-hp engines, were brought in. These machines were equipped with Sauerman ⅓ and ½-cubic-yard scraper buckets, and in one case, a Flexible clam-type 30-inch round bucket was used.

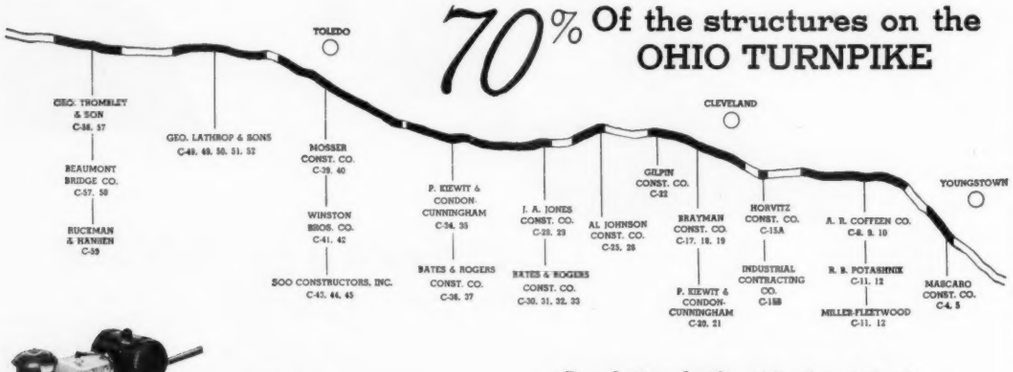
Small shop-built scarifiers with ripper teeth also were used in the process. Ramps were built at the broken out holes, and the Flexible bucket machines pulled up the tightly packed sand and gravel from the immediate area, cleaning the storm sewer thoroughly at that point so that tractor equipment could be lowered in. The Flexible sewer machines were also used with the combination of scraper buckets to clean the wide flattened sections across street intersections, because these 5-foot transitions were too tight for tractor equipment to work.

Use Tractor-Shovel

The most interesting aspect of the cleaning operation was the use of a relatively new machine in the tractor field—the front-end shovel. An Allis-Chalmers HD-5 tractor with a ¾-yard Tracto-Shovel was brought in. The hoisting frame on this machine was lengthened to tunnel height limit by adding 3 feet to the standard frame. This gave the machine, working down inside the concrete box, enough reach to dump a load of material directly onto the top slab. Rented cranes, usually a P&H machine belonging to the Utah Crane & Rigging Co., Salt Lake City, were used to pick up and lower the Allis-Chalmers machine to the inside of the storm drain.

Once it was inside the concrete box, there was only 18 inches of clearance between the walls and the sides of the machine. To provide ventilation, a large fan and blower were installed to remove any existing fumes.

The front-end shovel removed a total of 9,000 cubic yards of hard-packed material simply by working inside the box, picking up its load of material with a run, if necessary, and then backing up to the nearest opening and discharging the material. By means of the hoist frame extension, this operation was possible on a direct dump. An International TD-9 with a Bucyrus-Erie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They are the choice of 19 different contractors; are saving labor and maintenance costs on 43 of the 62 sections. To learn the reason for their fast increasing popularity

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Maginniss POWER TOOL CO.
Mansfield, Ohio

Down into the concrete sewer box goes the Allis-Chalmers tractor with Tracto-Shovel attachment. The machine will muck out the flood sediment and dump it on top of the sewer cover slab.

A motor-driven blower is used to ventilate the sewer tube and remove diesel fumes in the area where the tractor-shovel is operating. Salt Lake City crews did the usual cleanout job, which covered 9,000 feet of flood-damaged sewer.

Dozer-Shovel worked above the ground, and as the HD-5 brought material up, the International machines either shoved it away or loaded it directly to waiting trucks. This method was responsible for the removal of about 175 cubic yards per 8-hour shift and for the completion of the difficult assignment in about four months.

Begun at the entrance end of the storm sewer, the work proceeded toward the Jordan River, where further difficulties awaited the crews. High water threatened to drown out any operation at that point, and unless the storm sewer was cleaned thoroughly at the discharge end, all the other work which had been done at such effort would be nullified.

The end of the storm sewer was therefore bulkheaded off from the Jordan by means of heavy timbers and 3 x 8 planks. A Gorman-Rupp 10-inch pump, capable of emptying 240,000 gallons of infiltrating water per hour, was then set in place at the river end and connected to pump from a sump just inside the structure. The capacity of this machine proved adequate, and the last vestige of sand was cleaned out right up to the mouth of the structure.

When the timber bulkhead was removed, the storm sewer was once again as good as new. The cleanout holes which had been broken in the top of the structure were repaired by truck-mixed concrete, and 4-foot manhole covers were placed at most of these locations. When the job was finished, 13th Street South was in better shape, so far as protection from flood runoff was concerned, than it had ever been. The addition of the 60-inch main, along the older rectangular box, will virtually double the amount of storm water which can be carried along this main hydraulic artery.

Costs Justify Decision

The final cost tabulation showed a bill of $48,500 for the entire project. The figure included the purchase or rental of equipment and all labor and engineering assigned to the task.

Many city officials, including Mayor Earl J. Glade and Commissioner Joe L. Christensen took enough personal interest in the project to assist unofficially in its supervision. The work was done under actual direction of Roy McLeese, city engineer, assisted by Maurice N. McKendrick, sewer engineer. THE END

Timken Promotes Three

Three promotions have been made by The Timken Roller Bearing Co., Canton, Ohio, maker of bearings and detachable drill bits. Herchel M. Richey, factory manager of the bearing and rock bit divisions, has been made general factory manager. He joined the company in 1916, and served in various capacities until his promotion to factory manager in 1944.

Henry A. Tobey has been promoted to factory manager of the Canton and Gambrinus bearing factories. Wilber L. Young, former assistant chief inspector, has taken Mr. Tobey's former position as general superintendent of the Canton Bearing Division.

Michigan's shoreline, touching Lakes Superior, Michigan, Huron, and Erie, is the longest of any state, being 2,302 miles. It almost equals the shoreline of California, Oregon, and Washington.

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Lift or Lower the Load Notch by Notch—cannot be Tripped.

With Simplex Ratchet Lowering Jacks minimum toe clearance is necessary. Loads are usually lifted from the ground to the toe of the jack by pinch bars or wedges. Only Simplex Jacks provide equal lift capacity on toe or cap. No other jacks offer such a combination of low cost and all-purpose utility. In fast jacking action—extra-safety features—and rugged strength for longer life, Simplex Ratchet Lowering Jacks give you more for your money! Available in capacities of 1½ to 35 tons. Write today for Bulletin: Industrial 49.

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TEMPLETON, KENLY & CO.
2511 Gardner Road, Broadview, Ill.

New Crane Carrier

■ A new 6 x 6 crane carrier for mounting the Model T-35 Schield Bantam power shovel-crane has been announced by the Schield Bantam Co., Waverly, Iowa.

The Bantam Model 200 carrier has a number of components including a new GMC 6-cylinder engine, and new radiator, one-man cab, brake system, instruments, steering gears, and many other new assemblies. It also has an improved, reinforced main frame, and completely rebuilt secondary assemblies.

With 40-mph road speeds, a 2-speed transmission that offers 10 forward speeds and 2 reverse, six-wheel drive, and a short turning radius, the machine has good operating characteristics. The company reports that the rig will sell for considerably less than the average crane carrier of this type.

The Schield Bantam line also includes remanufactured 6 x 6 trucks; and an all-new 6 x 4 crane carrier, Model 100, for the Model T-35 shovel-crane. The company also manufactures a ⅜-yard crawler-mounted excavator, the Model C-35.

The new Bantam Model 200 crane carrier for the Model T-35 Shield-Bantam shovel-crane.

For further information write to the company, or use the Request Card at page 18. Circle No. 126.

Rock-Bolting Procedures

■ A booklet on rock-bolting procedures and techniques has been prepared by Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y. The literature also describes briefly the company's complete line of equipment manufactured for this application.

In explaining the theory of rock bolting, the literature uses illustrations to show how the process works. The article also outlines the advantages and disadvantages of the procedure. Contractors should find the sections on procedure, types of bolts, size of holes, and the making of the bearing plate informative and of practical use.

Other sections take up torquing the nuts, types of drills used, and size of impact wrenches recommended for rock-bolting jobs.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 163.

Line of Power Plants

■ A new bulletin generally describing the concern's new standard line of ac and dc power plants is available from the Katolight Corp., First Ave. at Chestnut, Mankato, Minn.

The brochure describes the portable 3,600-rpm manually started models in sizes of 650, 1,350, and 2,000 watts. An 1,800-rpm series in sizes from 500 through 5,000 watts, and driven with air-cooled engines, is also covered. This series is available with electric start and stop, and remote and automatic controls utilizing generator cranking windings.

Larger units to 50,000 watts, with both air and water-cooled engines, are shown in a series of 1,200-rpm as well as 1,800-rpm speeds.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 88.

Promotions and Transfers Are Made By Cummins Sales

Expansion of facilities by Cummins Sales & Service, Inc., Fort Worth, Texas, and the opening of branches in Amarillo, Dallas, and San Antonio, have resulted in a number of changes and promotions within the company.

J. A. Moseley, formerly shop foreman in Odessa, Texas, has been promoted to sales and service engineer in the Farmington, N. Mex., area. He is working out of the company's shop in Odessa. In Fort Worth, J. P. Williams has been promoted from service mechanic to service manager.

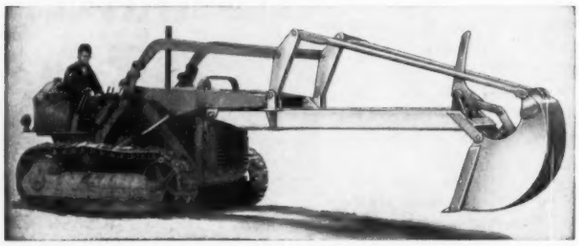
W. R. Bowman is the new service manager in Odessa. He was promoted when he was transferred from his job as sales and service engineer in Farmington. Mike Duncan is store and parts manager at the Wichita Falls, Texas, location. He formerly worked in the parts department. E. H. Smith, formerly service manager in Odessa, has been transferred to the Abilene, Texas, branch.

HEAVY-DUTY TRENCHER

WITH NEW IMPROVED SELF-CLEANING BUCKET — Capacity ½ yd.

A heavy-duty trench digger, which is designed for a wide variety of trenching for any highlift tractor with hydraulic bucket control.

It will increase the tractor's production from 30 to 50 per cent and is easily attached by one man in 15 minutes.



The Whitestown Trencher is now available for use on the following hydraulic controlled tractors:
Allis-Chalmers HD-5G equipped with TS-5 tractor-shovel
Caterpillar D-4 and Trackson HT-4; Oliver with 4-A Lull loader
International TD-6 & TD-9 equipped with new Bucyrus-Erie dozer-shovel
International TD-6, TD-9 & TD-14-A with Hough bulldozer-shovel
Hough Model HM & HR Payloader; Trojan Loadster, Models LM-75; LC-100-B
International TD-9 with Ateco Loader; Pettibone-Mulliken Model 15-D Speedail

The Whitestown trencher is equipped with a ½-yard standard bucket. Special buckets, made to individual specifications, may be obtained. It will dig to a depth of 8 feet and dump at a height of 12 feet. This trencher has been in constant use for four years, and has proved to be rugged and satisfactory in every way.

● ***Immediate delivery can be made.***

● ***Please specify make of tractor.***

WHITESTOWN TRENCHER CO., INC.

Wood Road, Whitesboro, New York — Phone: Utica 6-2430

KOHLER ENGINES

4-CYCLE • AIR-COOLED

K90 3.6 H.P.
K160 6.6 H.P.
K330 11.8 H.P.
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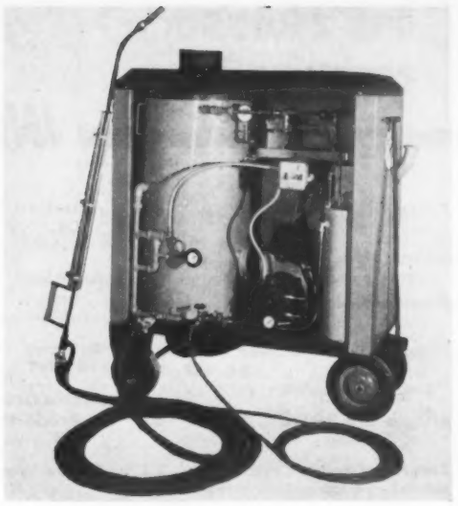
AIR-COOLED ENGINES • PRECISION CONTROLS

THE INSTALLATION OF AN IMC moisture-control system in a concrete-producing plant makes it possible to tell at a glance the moisture content of the aggregate and to adjust for it accurately as each batch is weighed. Shown here is the Meter Recorder that gives the moisture measurements. A compensation unit supplies the figures for making adjustments. For further information write to the Instant Moisture Control Division, Colorado Pre-Mix Concrete Co., 1021 W. Mississippi Ave., Denver 19, Colo., or use the Request Card at page 18. Circle No. 162.



THIS PORTABLE OIL-FIRED steam cleaner is made by Quick-Charge, Inc., 1750 N. E. 10th St., Oklahoma City 4, Okla. The Model QSI features completely automatic operation, the only controls being two electric switches which start and stop the cleaner. Cleaning power comes from 120-pound pressure delivered at a rate of 120 gph. For further information write to the company, or use the Request Card at page 18. Circle No. 84.

"Must be getting near lunch time. I can hear your stomach growling!"

You Have The World's Best Laboratory for Testing Hoists

Specifications are helpful guides in choosing the right hoist for your job. Factory tests give further assurance. But the hoists on your own job hold the key to your wisest final choice. These hoists have been tested in the world's best laboratory for your purposes. They have been operated by *your* men under *your own* exacting conditions. Their performance takes the guesswork out of choosing.

That's why Coffing Safety Pull Ratchet-Lever Hoists are standard on so many construction and maintenance jobs. Their record of durability and safety for more than 25 years under actual job conditions puts them in a class by themselves as the wise choice.

Examine the hoists in *your* "laboratory." Which is the oldest one in good working condition? When safety is vital, which hoist do your men use? We believe the answer is Coffing — the *original* ratchet-lever hoist. If you would like more information on the complete line of Coffing Ratchet-Lever hoists, write for catalog C8SP.

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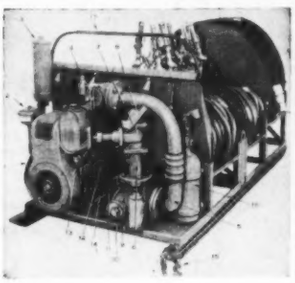

Gasoline Engine Powered Yale & Town Pump —100 G.P.M. One intake hose 100'-3", 4 Reels of 75'-1¼" hose with Siamese connection of two 10'-1" hose, each with one Bronze Whistler Type Dispenser Nozzle. Eight nozzles in all. Skid mounted. Weight 3500 lbs.

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INDEX TO ADVERTISERS

(Names in italics are advertising agencies)

Acker Drill Co., Inc. 45
Bauer Adv., Inc.

Adams Mfg. Co., J. D. 47
Caldwell, Larkin & Co., Inc.

Ainsworth & Sons, Wm. ... 12
Walter L. Schump Adv.

Allis-Chalmers Tractor Div. 66, 67, 84
Bert S. Gittins Adv.

Allison Div., GMC 63
Kudner Agency, Inc.

American Bosch Corp. 22
Humbert & Jones

American Hoist & Derrick Co. 73
Ruthrauff & Ryan, Inc.

American Tire Machinery, Inc. 45
Bob Robinson, Inc.

Anthony Co. 30
Biddle Co.

Armco Drainage & Metal Products, Inc. 114
N. W. Ayer & Son, Inc.

Austin-Western Co. 83
Merrill, McEnroe & Assoc., Inc.

Badger Machine Co. 70
Graves & Associates

Baker-Roos, Inc. 13
George S. Diener Co.

Baldwin-Lima-Hamilton Corp. 100
Ketchum, MacLeod & Grove, Inc.

Barber-Greene Co. 80
Buchen Co.

Barnes Mfg. Co. 60
Odell & Associates

Bethlehem Steel Co. .. 96, 111
Jones & Brakeley, Inc.

Birmingham Mfg. Co., Inc. . 39
Silver & Douce Co., Inc.

Bros Boiler & Mfg. Co., Wm. 120
Alfred Colle Co.

Brunner & Lay, Inc. 82
Norman P. Hewitt

Buck Equipment Corp. ... 110
Liebing & Parkins Adv. Agency

Bucyrus-Erie Co. 102, 103
Bert S. Gittins Advertising

Buffalo-Springfield Roller Co. 112
Farson, Huff & Northlich

Calif. Welding & Blacksmith Shop, Inc. 86
Dan Ebberts Adv. Service

Carlisle Chemical Works, Inc. 41

Caterpillar Tractor Co. 14, 15, 21, 123
N. W. Ayer & Son, Inc.

Chevrolet Div., GMC 57
Campbell-Ewald Co.

Cleveland Trencher Co. ... 85
Meermans, Inc.

Clinton Machine Co., Engine Div. 107
Biddle Co.

Clipper Mfg. Co. 71
Kaufman Adv. Co., Inc.

Coffing Hoist Co. 119
Bert S. Gittins Advertising

Colorado Fuel & Iron Corp. 34
Doyle, Kitchen & McCormick, Inc.

Construction Machinery Co's. 64
Weston-Barnett, Inc.

Continental Motors Corp. . 91
Hopkins Agency

Continental Rubber Works 108
Eugene C. Laird, Advertising

Cummer & Son Co., F.D. .. 86
W. N. Gates Co.

Cummins Engine Co., Inc. 36, 37
Needham, Louis & Brorby, Inc.

Dempster Brothers, Inc. .. 113
Charles S. Kane Co.

Des Lauriers Column Mould Co., Inc. 48
Hanson & Hanson, Inc.

Dewey & Almy Chemical Co. 39
Horton-Noyes Co.

Dotmar Industries, Inc. ... 73
Tri-State Adv. Co., Inc.

Dudgeon, Inc., Richard ... 24
Richmond Adv. Service, Inc.

Eimco Corp. 33, 48
Matsie Co.

Elsevier Press, Inc. 34

Euclid Div., GMC 94, 95
Richard T. Brandt, Inc.

Fate-Root-Heath Co. 98
Howard Swink Adv. Agency, Inc.

Felker Mfg. Co. 92
Clyde D. Graham, Adv.

Fennel Instrument Corp. of America 92
Posner-Zabin

Foote Constr. Equip. Div. 49, 101
Russell T. Gray, Inc.

Ford Motor Co. 17
J. Walter Thompson Co.

Fuller Mfg. Co. 99
Spencer Curtiss, Inc.

Funk Aircraft Co. 52
Bryan & Bryan, Advertising

Galion Iron Works & Mfg. Co. 50, 51
Morgan Adv. Co.

Gar-Bro Mfg. Co. 90
Dan Ebberts Adv. Service

Garrison Mfg. Co. 106
Clyde D. Graham, Adv.

Gar Wood Industries, Inc. 77
Dobbins, Woodward & Co.

General Machine & Welding Works, Inc. 57
Neale Adv. Associates

Gilson Screen Co. 68
Edge & Armbruster

GMC Truck & Coach Div. .. 78
Kudner Agency, Inc.

Guild Constr. Co., Inc., C. L. 35
Stanley Associates

Harnischfeger Corp. 115
Buchen Co.

Hayward Co. 78
Rickard & Co., Inc.

Heller Engineering & Mfg. Co. 46
Danken Associates

Heltzel Steel Form & Iron Co. 82
McClure & Wilder, Inc.

Hendrix Mfg. Co., Inc. 62
Svolos Adv. Service

Hercules Steel Products Corp. 110
Howard Swink Adv. Agency, Inc.

Highway Equipment Co., Inc. 87
Ambro Adv. Agency

Hunt Process Co., Inc. 33
Degner & Associates

Hyatt Bearings Div., GMC .. 40
D. P. Brother & Co.

Ingersoll-Rand Co. 23
Rickard & Co., Inc.

International Harvester Co. insert following p. 62
Leo Burnett Co., Inc.

International Vibration Co. 39
Howson Advertising

Jackson Vibrators, Inc. ... 79
Stevens, Inc.

Jaeger Machine Co. 89
Mumm, Mullay & Nichols, Inc.

J-W Materials, Inc. 84

Kiesler Co., Joseph F. 40

Koehring Co. 54, 55
Andrews Agency, Inc.

Kohler Co. 118
Roche, Williams & Cleary, Inc.

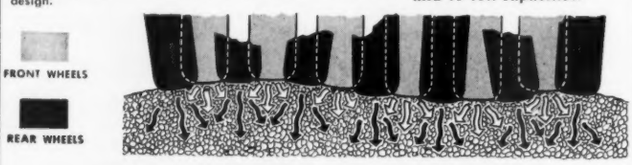
BROS *tip sheet*

EQUIPMENT NEWS FROM A FAMOUS NAME IN ROAD MACHINERY

COSTLY EXTRA PASSES ELIMINATED WITH "WIDE TIRE" COMPACTION ROLLERS BY BROS

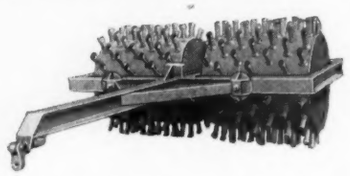
Look below and see how the world-famous Bros Wobble-Wheel design (patented and copyrighted) works. Added to the regular up-and-down oscillating motion is a side-to-side weaving, kneading motion of each wheel, that aids compaction. You can get Bros rollers with this design or oscillating Straight-Wheel design.

No more lines, ridges or marks! New Bros pneumatic tire rollers give you full coverage of every surface contour on *every pass!* Now you can use the same roller for seal-coat rolling as well as rough base compaction. New design of Bros kingpin makes drawbar hookups easier, at any height. Three models—7, 9 and 13-ton capacities.



CHOOSE A TAMPER THAT'S READY FOR ROUGH AND TOUGH COMPACTION WORK

A sheepfoot tamping roller is one thing you don't want to waste time on. Therefore, get tampers that are built to last, like the Bros medium-weight "M" series. These tampers have a heavy outer shell and integral steel axle connected by welded end plates. Self-aligning bearings. Frame is encircling box type, very strong. Specify the *toughest* — specify Bros!



Bros "M" Series sheepfoot tampers come in 1, 2 and 3 drum models. Choice of 5½ or 7 sq. in. foot surface areas. Ft. psi range from 108 lbs. to 315 lbs. Extra drawbar for tandem work.

"Quickies" for your information

Don't be caught with "orphan" compaction equipment. Remember that Bros is the world's largest manufacturer of pneumatic tire rollers.

•

Bros originated and patented the giant 50-ton rubber-tire Roll-O-Pactor, widely used on the big jobs.*

Giant-weight Bros "G" Series tamping rollers range in ft. psi from 260 to 738 lbs.

•

Bros also makes "special" types of tamper and smooth drum rollers, to order. Let us quote you.

Road Machinery Division, **WM. BROS BOILER & MFG. CO.**

1189 Tenth Avenue S. E. • Minneapolis 14, Minnesota

To get specifications and data on any of the Bros compaction products listed below, just check the items which interest you and send us this slip, along with your name, company or organization and address.

☐ Bros 35 and 50-ton Roll-O-Pactors*
☐ Special Airborne Roll-O-Pactors*
☐ Bros 7, 9 and 13-ton Pneumatic Tire Rollers
☐ Giant weight Bros "G" Series Tamping Rollers
☐ Medium weight Bros Series "M" Tamping Rollers
☐ Bros smooth drum rollers

Laclede Steel Co. 87
Batz-Hodgson-Neuwoehner
Leschen Wire Rope Div. . . . 61
Arthur R. MacDonald, Inc.
LeTourneau-Westinghouse Co. 25, 97
Andrews Agency, Inc.
Light Products, Inc. 109
Kay-Christopher, Adv.
Littleford Brothers, Inc. . . 65
Jaap-Orr Co.
Lufkin Rule Co. 44
Jepson-Murray, Adv.

Madesco Tackle Block Co. . 76
H. Arthur Engleman Adv.
Madsen Iron Works, Inc. . . 106
Frank Barrett Cole, Adv.
Maginniss Power Tool Co. . 116
Cye Landy Adv. Agency, Inc.
Marion Metal Products Co. 44
Jay H. Maish Co.
Master Builders Co. 2
Bayless-Kerr Co.
McCaffrey-Ruddock Tagline Corp. 46
Martin R. Klitten Co., Inc.
McCarter Iron Works, Inc. . 79
Hopson Adv. Agency
McConnaughay, K. E. 76
Grubb & Petersen
McKiernan-Terry Corp. . . . 122
Michel-Cather, Inc.
McKinney Drilling Co. 111
McKissick Products Corp. . . 8
Martha Stone & Associates
Meyer-Opticraft, Inc. 56
Mid-Western Industries, Inc. 32
Associated Adv. Agency, Inc.
Miller Research Engineers . 43
Franklin Fisher Adv. Agency
Minneapolis-Moline 69
Graves & Associates
Miracle Decal Co. 119
Lago & Whitehead Co.
Monarch Road Machinery Co. 52
Etheridge Co.
M-R-S Mfg. Co. 26, 27
Robert J. Peets, Advertising

Naylor Pipe Co. 81
Fred H. Ebersold, Inc.
Newman Mfg. & Sales Co. . 38
Carter Adv. Agency, Inc.

Owatonna Tool Co. 72
E. T. Holmgren, Inc.

Perlite Institute 65
Asher, Godfrey & Franklin, Inc.
Phoenix Products Co. 53
Barnes Adv. Agency, Inc.
Plymouth Locomotive Works 98
Howard Swink Adv. Agency, Inc.
Posey Iron Works, Inc. . . . 58
Wilson Browne, Advertising
Power Products Corp. 42
Ken Seitz & Associates
Preco Inc. 24
Shaw Co.
Punch-Lok Co. 31
Merrill, McEnroe & Assoc., Inc.

"Quick-Way" Truck Shovel Co. 59
Galen E. Broyles Co., Inc.
Quinn Wire & Iron Works 60
Lessing Adv. Co., Inc.

Reisser Corp. 38
Floyd F. Mellen, Advertising
Richmond Screw Anchor Co., Inc. 12
William Von Zehle & Co., Inc.
Rockford Clutch Div. 104
Midwest Adv. Agency

Roeth Vibrator Co. 70
Promotions, Inc.
Rogers Brothers Corp. 90
T. H. Ball & Son
Rolatape, Inc. 99
Ford C. McElligott & Assoc.
Ryan, F. B. 88

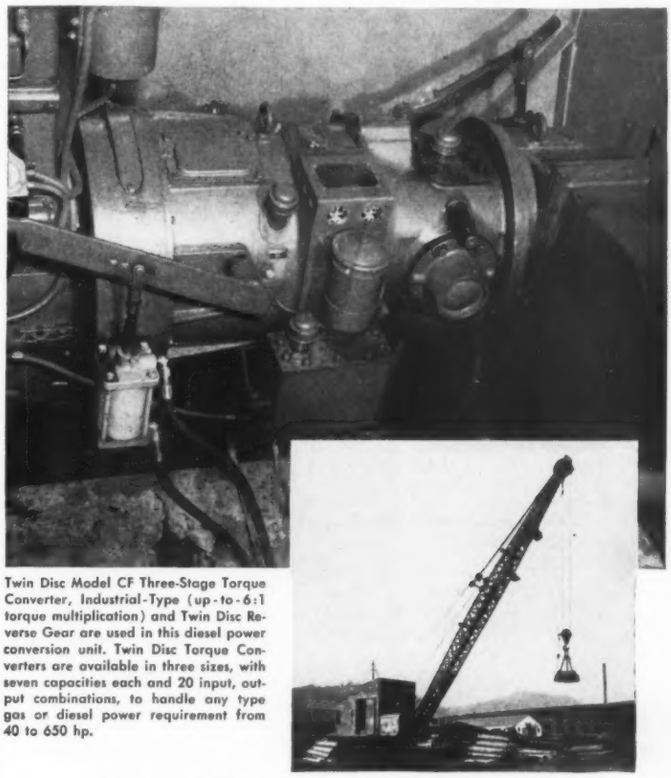
Salem Tool Co. 68
Meek & Thomas, Inc.
Sawyer & Son Co., H. M. . . 56
McMillan & Marsden, Inc.
Seaman Motors, Inc. 43
Morrison-Greene-Seymour, Inc.
Servicised Products Corp. . 72
Ross Llewellyn Inc.
Shawnee Mfg. Co. 80
Carl Lawson Adv. Co.
Slope Meter Co. 69
Soilaire Industries 77
Olmsted & Foley
Southwest Welding & Mfg. Co. 13
Dan Ebberts Adv. Service
Sprague & Henwood, Inc. . 49
Frederick B. Garrahan, Ind. Adv.
Standard Steel Corp. 30
McCarty Co.
Storer Decal Co. 35
Stow Mfg. Co. 91
Riger & Sheehy, Adv.
Stulz-Sickles Co. 68
Sidney Koretz & Co., Inc.
Superior Concrete Accessories, Inc. 105
Admakers
Superior-Lidgerwood-Mundy Corp. 53
Albert Frank-Guenther Law, Inc.
Swenson Spreader & Mfg. Co. 42
Hollingsworth & Collins
Symons Clamp & Mfg. Co. . 45
Marsteller, Gebhardt & Reed, Inc.

Tampo Mfg. Co. 19
Thomas F. Conroy, Inc.
Tectum Corp. 104
Bayless-Kerr Co.
Templeton, Kenly & Co. . . . 117
Glenn-Jordan-Stoetzel Inc.
Texas Co., Asphalt 5
Texas Co., Lubricants . . . 10, 11
Erwin, Wasey & Co., Inc.
Thew Shovel Co. 93
Hosler Advertising, Inc.
Timken Roller Bearing Co. . 18
Batten, Barton, Durstine & Osborn, Inc.
Twin Disc Clutch Co. 121
Spencer Curtiss, Inc.

Union Wire Rope Corp. . . 74, 75
R. J. Potts, Calkins & Holden, Inc.
Unit Crane & Shovel Corp. . 58
Paulson-Gerlach & Assoc., Inc.
United States Rubber Co. . . 88
Fletcher D. Richards, Inc.
Universal Atlas Cement Co. 7
Batten, Barton, Durstine & Osborn, Inc.
Universal Concrete Pipe Co. 64
Byer & Bowman
Universal Form Clamp Co. . 109
Ross Llewellyn, Inc.
Universal Mfg. Corp. 52
Lando Adv. Agency

Vacuum Concrete, Inc. 107
Loog, Katz & Barrington
Van Brush Mfg. Co. 59
Vibro-Plus Products, Inc. . . 80
Woodward & Byron, Inc.
Vulcan Iron Works 81
Biddle Co.
Vulcan Tool Mfg. Co. 32

Water Seals, Inc. 56
Lester L. Jacobs, Inc.
Webrib Steel Corp. 9
Franklin Fader Co.
White Mfg. Co. 16
Juhl Adv. Agency
Whiteman Mfg. Co. 124
Taggart & Young
Whitestown Trencher Co., Inc. 118
Whitney Metal Tool Co. . . . 59
Cummings, Brand & McPherson
Wico Electric Co. 53
Gibney & Barreca
Willard Concrete Machinery Sales Co. 31
Dan Ebberts Adv. Service
Winpower Mfg. Co. 23
Cary-Hill, Inc.
Winslow Scale Co. 71
Wisconsin Motor Corp. 108
Paulson-Gerlach & Assoc., Inc.



Twin Disc Model CF Three-Stage Torque Converter, Industrial-Type (up-to-6:1 torque multiplication) and Twin Disc Reverse Gear are used in this diesel power conversion unit. Twin Disc Torque Converters are available in three sizes, with seven capacities each and 20 input, output combinations, to handle any type gas or diesel power requirement from 40 to 650 hp.

Conversion unit with Twin Disc Torque Converter saves $3,344.64 in one year

To get modern, flexible horsepower on a 32-year-old steam locomotive-crane, Edgewater Steel Company converted to a new diesel power unit.

And to get *more work* from the 165 hp of the Cummins HRIP-600 Diesel—with silken-smooth transmission of torque in exact proportion to the load demand—a *complete* power unit was recommended . . . *equipped with a Twin Disc Three-Stage Torque Converter.*

Here are the results: steady, dependable *reserve* power that crowds the load every second, without engine-lugging. Slacking and jerking are *eliminated.* Work cycles are *up* . . . and it has been reported that operating costs are *down,* from $11,232.00 to $7,887.36 per year.

If you're repowering, buy a *complete* power unit . . . equipped with a Twin Disc Torque Converter. They're available from your industrial engine dealer. For specific information, write Twin Disc, Hydraulic Division, Rockford, Illinois.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
TWIN DISC

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

MANUFACTURER MEMOS

Spencer Will Manufacture Construction Unit Parts

The Spencer Mfg. Co. of Ohio, Spencer, Ohio, recently purchased by a group of Chicago industrialists, will expand its production facilities to manufacture axle and drive shafts for heavy-duty construction equipment. Formerly, the company designed and produced these parts for the automotive and trucking industries.

H. A. Warburton, Jr., former Spencer sales manager, is executive vice president in charge of the Ohio operation. He will make his headquarters in the company's executive office in the Keith Building, Cleveland, Ohio. D. F. Patterson is assistant sales manager, and H. F. Rolf, sales manager of the replacement parts division. Spencer maintains sales offices in Chicago, Ill.; Wilmington, Del., and Phoenix, Ariz. Equipment sales will be handled through Cleveland, and export sales will be handled in Chicago.

Homer G. Abbott, vice president of Standard Steel Works.

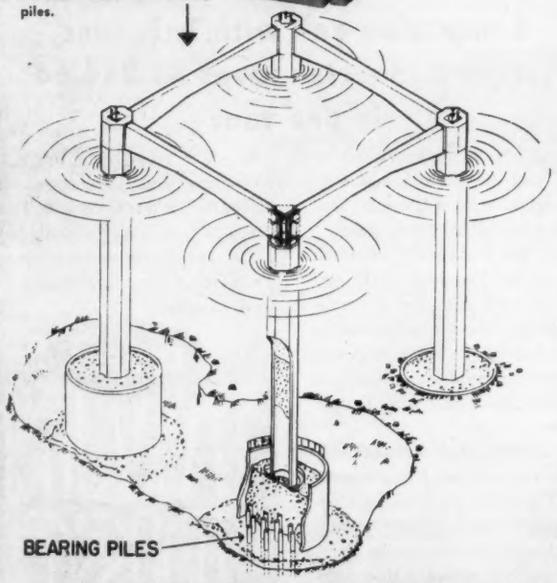
Abbott Is Vice President Of Standard Steel Works

As vice president in charge of production for Standard Steel Works, North Kansas City, Mo., Homer G. Abbott will be in charge of all production of the company's road machinery and transports. Before he was elected vice president, Mr. Abbott was head of the production-control department and in charge of the industrial relations department. He has been a member of Standard Steel's production staff for 18 years.

Underwater Pile Driving *with a* McKIERNAN-TERRY *Pile Hammer*

McKiernan-Terry Single-Acting Pile Hammer—one of the 16 different types and sizes in the McKiernan-Terry line which also includes double-acting pile hammers and extractors.

Sketch of one of the main piers for which a McKiernan-Terry S5 Single-Acting Pile Hammer drove the bearing piles.



THE JOB . . . driving 184 timber piles *under water,* to a pile cut-off 63 feet below sea level, with each pile submerged at least 25 feet before the steam was turned on.

THE LOCATION . . . foundations for two main towers of the Pacific Gas & Electric transmission line crossing San Francisco Bay near the San Mateo bridge.

THE PERFORMANCE . . . "We are happy to report that the trouble-free performance of the McKiernan-Terry S5 Single-Acting Pile Hammer on this job was most gratifying." (from a letter by the engineer of the contractor, Ben C. Gerwick, Inc. of San Francisco)

This report is typical of the results obtained by contractors all over the country who use McKiernan-Terry Single-Acting Pile Hammers . . . *the only hammers of this type that can be operated under water.* Write for bulletin describing these completely modern hammers in detail . . . built in a range of sizes to cover all requirements of driving into dense substances or for driving heavy mass piles.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION, Manufacturing Engineers

Other Products: Coal and Ore Unloaders and Bridges, Grab Buckets, and Special Machinery

19 PARK ROW, NEW YORK 38, N. Y. • PLANTS: HARRISON, N. J. AND DOVER, N. J.

MK 342

Gardner-Denver Elects G. V. Leece President

Gifford V. Leece and Bejamin C. Essig have been elected president and executive vice president, respectively, of the Gardner-Denver Co., Quincy, Ill., manufacturer of drills, pumps, hoists, and other construction equipment.

Vice president and sales manager since 1947, Mr. Leece joined the company in 1922 and served in various positions at the Quincy plant and on the sales staff. He has been branch manager of southern California activities, sales manager of the company's oil field products, and Pacific Coast manager. He became branch manager of the New York City division in 1938.

Mr. Essig joined Gardner-Denver's sales-engineering staff at Denver in 1923 and held several managerial positions before his election as vice president in charge of the Denver plant in 1938.

Osgood-General Appoints

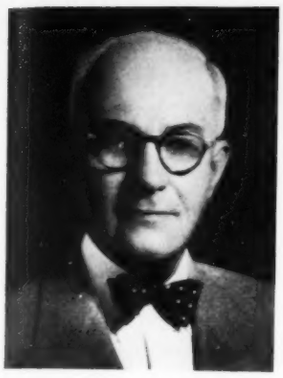
Kenneth O. Williamson has been appointed sales manager for the line of excavators and material-handling equipment manufactured by Osgood-General, Marion, Ohio. Associated with the company since 1941, and formerly assistant sales manager, he succeeds James S. Fortiner, who has resigned.

Koehring Appoints Two

Two executive appointments have been made by Koehring Co., Milwaukee, Wis., construction equipment manufacturer. Vice president and general manager of Koehring Southern Co., Chattanooga, Tenn., a Koehring subsidiary, is D. W. Marchant. N. J. Decker is assistant to Vice President E. A. Brugger, who is in charge of manufacturing for Koehring Co.

Mr. Marchant was formerly works manager at the Milwaukee plant; Mr. Decker has been general manager of Koehring Southern since 1952.

D. W. Marchant, vice president and general manager of Koehring Southern Co., Chattanooga, Tenn.



The late Leslie H. Garlinghouse, co-founder and for many years general manager of the Gar-Bro Mfg. Co.

L. H. Garlinghouse Dies; Was Gar-Bro Co-Founder

A long-time contributor to equipment design and production, and co-founder of the Gar-Bro Mfg. Co., Los Angeles, Calif., Leslie H. Garlinghouse, died June 26 in Pasadena, Calif., after a long illness. He was 66 years of age.

Mr. Garlinghouse had been associated for 28 years with his brother, Albert F. Garlinghouse, in the firms of Garlinghouse Bros. and Gar-Bro Mfg. Co., manufacturers and distributors of construction equipment. He retired from active participation in both businesses several years ago.

He was born in Leadville, Colo., and graduated with an engineering degree from Rensselaer Polytechnic Institute in 1910. He worked as a designing engineer for the Blaw-Knox Co. and American Bridge Co. in Pittsburgh, Pa., before going to California in 1923, when he and his brother formed the equipment distributing and engineering firm of Garlinghouse Bros.

Caterpillar Elects Blackie Executive Vice President

William Blackie, a vice president of Caterpillar Tractor Co., Peoria, Ill., since 1944, has been elected an executive vice president of the company. Sharing administrative responsibilities with Harmon S. Eberhard, president, and A. T. Brown, executive vice president, he will continue to direct the company's plants and subsidiaries.

Joining Caterpillar in 1939 as controller, Mr. Blackie has served as chairman of the board of Caterpillar Tractor Co., Ltd., of Coalville, in England, and as a member of the board of Trackson Co. of Milwaukee, Wis., since the two companies were formed as Caterpillar subsidiaries.

William Blackie, executive vice president of Caterpillar.

Hawkins Is President Of Bay City Shovels

Donald E. Hawkins has been elected president of Bay City Shovels, Inc., Bay City, Mich., succeeding Morgan Ramsey, who has retired. Mr. Ramsay will continue to serve on the company's board of directors in an advisory capacity.

Mr. Hawkins has held several official positions in the company since he joined it in 1928. He was named to the board of directors in 1943, and in 1947 he was made secretary and treasurer. He will retain the position of treasurer, while Morgan Ramsay, Jr., will be secretary of the company.

Armco Drainage Promotes Three Sales Executives

In a series of appointments, Armco Drainage & Metal Products, Inc., has made Max H. Bailey division sales engineer of the Calco Division; O. M. Carter, sales manager for Mississippi and Arkansas; and Crosby W. Bean, division sales engineer for the Southwestern Division. The company, a subsidiary of Armco Steel Corp., Middletown, Ohio, manufactures steel products for the construction industry.

Mr. Bailey was formerly manager of welded pipe sales for the Western Division of the company. Mr. Carter, who will make his headquarters in Memphis, Tenn., was division sales engineer for the Southwestern Division until his promotion. Mr. Bean, who will assume the post vacated by Mr. Carter, has been a sales engineer for several divisions of the company.

Near the western end of the 241-mile Ohio Turnpike, a fleet of Caterpillar equipment is rushing to completion a 14-mile section for V. N. Holderman & Sons, Inc., Columbus.

One piece of equipment is a Bucyrus-Erie dragline powered by a venerable Caterpillar D17000 Diesel. It helps explain why Holderman has so much Cat equipment.

The D17000 is seven years old. In that time, the extent of repairs to this hard-working engine has been one fuel pump!

The entire fuel system of Caterpillar Diesels is foolproof. There is not one operating adjustment! Replacing injection pumps is simplicity itself. No regulation in the field is necessary because each is permanently adjusted at the factory. They are made to precision tolerances—the barrel and plunger fit is measured in millionths of an inch. That's why all these pumps are completely interchangeable.

Examined closely, the fuel transfer pump alone speaks volumes about the thoroughness of Caterpillar Engine design. The pump is of gear type and has enough capacity and suction lift to assure a complete supply of fuel to the injection pumps. It is completely sealed against dirt.

And, of course, the entire fuel system is protected by a series of filters and seals unmatched by any other diesel engine. Yet all Caterpillar Engines work on common furnace oil — and they do it without fouling.

This attention to detail in the fuel system is characteristic of all parts in Caterpillar Diesels. It's the reason why these engines are ready to work when you are. It's the reason so many Cat Engines are still on the job after delivering 100,000 hours of profitable performance!

Avoid trouble. Follow the example set by road building leaders. Specify Cat Diesels when you repower or buy new equipment. All leading equipment manufacturers can supply them with their machines.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks — ®

FOR HIGH-PROFIT PERFORMANCE— SPECIFY CAT POWER

THERE'S A Whiteman MODEL FOR

EVERY SIZE JOB!

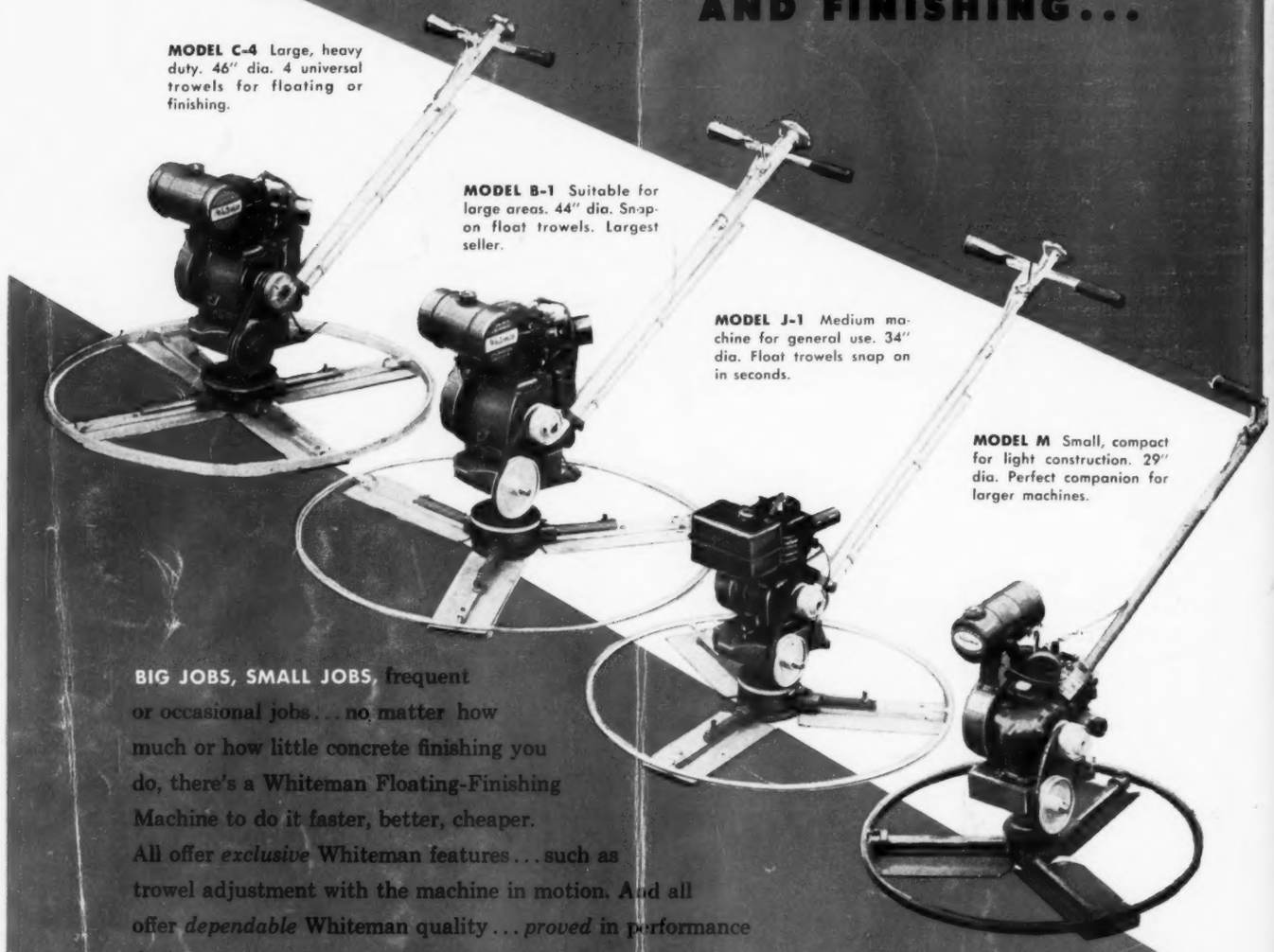
OF CONCRETE FLOATING AND FINISHING...

MODEL C-4 Large, heavy duty. 46" dia. 4 universal trowels for floating or finishing.

MODEL B-1 Suitable for large areas. 44" dia. Snap-on float trowels. Largest seller.

MODEL J-1 Medium machine for general use. 34" dia. Float trowels snap on in seconds.

MODEL M Small, compact for light construction. 29" dia. Perfect companion for larger machines.



BIG JOBS, SMALL JOBS, frequent or occasional jobs... no matter how much or how little concrete finishing you do, there's a Whiteman Floating-Finishing Machine to do it faster, better, cheaper. All offer *exclusive* Whiteman features... such as trowel adjustment with the machine in motion. And all offer *dependable* Whiteman quality... *proved* in performance during 17 years of pioneering and development. Ask your Whiteman distributor which machine will best serve your needs.

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